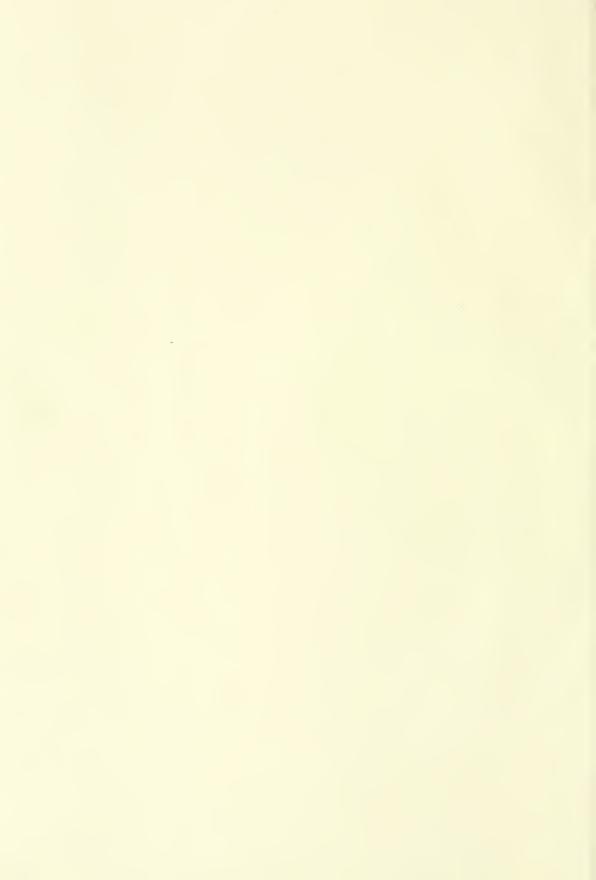








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BULLETIN UNIVERSITY COLLEGE

Part-time Undergraduate Programs

1994-95

NORTHEASTERN UNIVERSITY



Contents

Introduction

About University College 2
1994-1995 Academic Calendar 3
Counseling and Personal Career Search Activities 6
University College Offices 13
Policies and Procedures 15

- Degree Program Policies and Procedures 21
- Transfer Credit Policies and Procedures 26
- Grading System Policies and Procedures 30
- Graduation Policies and Procedures 33

Programs of Study

Overview of Academic Programs 35
Certificate and Special Programs 38
Intermediate and Advanced Certificate Programs 58
Special Programs 61
Business Administration Degree Programs 67
Technology Degree Programs 95
Criminal Justice and Security Degree Programs 98
Health Professions and Sciences Degree Programs 105
Liberal Arts Degree Programs 127
Alternative Freshman-Year Program 152

Course Descriptions 155

General Information

Tuition and Fees 264 Financial Aid 267 Scholarships 269

Appendix

Facilities and Resources 275
About Northeastern University 276
Faculty 286
University College Administrative Officers 300
University Governing Boards and Officers 302
Campus Maps 305
Index 311

About University College

...The Remarkable Part-time Undergraduate Division of Northeastern University

John W. Jordan Dean, University College

It is a pleasure each year to welcome you to University College and to tell you a little bit about this remarkable institution.

You, the adult student, are the most remarkable part of University College. Your ongoing quest for improvement, your thirst for enrichment, and your stoic tenacity are nothing less than inspirational. We understand the juggling you do and the stresses you endure. We admire the courage it takes to come back and keep at it. We are familiar with your dreams and aspirations and we are dedicated to help you get to where you want to be. We understand because you bring out the best in us, and that has led us to the top position we hold in continuing higher education. In fact, we are called University College because we embody the best of two academic worlds. As an integral part of a great university, we provide you with the energies and resources of a multifaceted dynamic institution. As a pioneer of adult education we bring you a "can-do" spirit, infused with creativity, academic vitality and practical savvy.

Our faculty is a rich blend of full-time professors and practicing professionals, including corporate executive officers, published authors, health practitioners, and

government leaders.

Our programs reflect the premium we place on quality and innovation. They are constantly evaluated and updated to respond to the changing professional needs and personal interests of adult learners. One admirable product of this invigorating process is our campaign to make University College "The Write Place." It is a source of special pride to us, and I urge you to read more about it by turning to page 6 in this Bulletin.

Thus, with your plans and ideas as a guide, you can set your sights on any direction at University College. Consider this <u>Bulletin</u> one of many road maps, and our faculty, advisors, and administrators your mentors and advocates. It bears repeating: you are what is most remarkable about University College and we will always be there for you.

Good luck!

John W. Jordan

1994-1995 Registration Calendar

Fall Quarter Registration Dates for Classes that begin Monday, September 26

Boston - Main		1
Tuesday-Friday	September 6-9	9:30 a.m7:00 p.m.
Saturday Monday-Wednesday	September 10 September 12-14	9:00 a.m12:00 noon 9:30 a.m7:00 p.m.
Boston - Downtown		
Tuesday-Thursday Monday-Tuesday	September 6-8 September 12-13	11:00 a.m7:00 p.m. 11:00 a.m7:00 p.m.
Burlington		
Wednesday-Thursday Monday-Tuesday	September 7-8 September 12-13	5:30-7:30 p.m. 5:30-7:30 p.m.
Dedham		
Thursday and Monday	September 8 & 12	5:30-7:30 p.m.
Framingham		
Tuesday and Monday	September 6 & 12	5:30-7:30 p.m.
Malden		
Wednesday and Monday	September 7 & 12	5:30-7:30 p.m.
Marlboro		
Wednesday and Monday	September 7 & 12	5:30-7:30 p.m.
Marshfield		
Thursday and Tuesday	September 8 & 13	5:30-7:30 p.m.
Milford		
Thursday and Tuesday	September 8 & 13	5:30-7:30 p.m.
Westwood		
Tuesday and Tuesday	September 6 & 13	5:30-7:30 p.m.

Fall: Special Dates

Columbus Day observed:
 Monday, October 10

Veteran's Day observed:
 Friday, November 11

Thanksgiving Recess:
 Thursday-Saturday
 November 24-26

Final Examination Period:
 Monday-Saturday
 December 12-17

Christmas Vacation:
 Monday-Saturday
 December 19-December 31

Winter Quarter Registration Dates for Classes that begin Tuesday, January 3

September 7 & 12

5:30-7:30 p.m.

Weymouth

Wednesday and Monday

Boston - Main		
Monday-Thursday	Dec. 5-Dec. 8	9:30 a.m7:00 p.m.
Boston - Downtown		
Monday-Wednesday	Dec. 5-Dec. 7	11:00 a.m7:00 p.m.
Burlington		6
Monday-Wednesday	Dec. 5-Dec. 7	5:30-7:30 p.m.
Dedham		
Monday-Wednesday	Dec. 5-Dec. 7	5:30-7:30 p.m.

Winter Quarter Registration Dates (continued)

Framingham Monday-Tuesday	Dec. 5-Dec. 6	5:30-7:30 p.m.
Malden Monday	December 5	5:30-7:30 p.m.
Mariboro Monday	December 5	5:30-7:30 p.m.
Marshfield Tuesday	December 6	5:30-7:30 p.m.
Milford Tuesday	December 6	5:30-7:30 p.m.
Westwood Monday-Wednesday	Dec. 5-Dec. 7	5:30-7:30 p.m.
Weymouth Monday-Wednesday	Dec. 5-Dec. 7	5:30-7:30 p.m.

Winter: Special Dates

Martin Luther King, Jr.'s Birthday observed: Monday, January 16

Presidents' Day observed: Monday, February 20

Mandatory Make-up Day for Monday classes: Friday March 11

Final Examination Period: Monday-Saturday March 20-25

Spring Recess: (or makeup period for lost snow days) Monday-Saturday

March 27 - April 1

Spring Quarter Registration Dates for Classes that begin Monday, April 3

March 13-16	9:30 a.m7:00 p.m.
March 13-15	11:00 a.m7:00 p.m.
March 13-15	5:30-7:30 p.m.
March 13-15	5:30-7:30 p.m.
March 13-14	5:30-7:30 p.m.
March 13	5:30-7:30 p.m.
March 13	5:30-7:30 p.m.
March 14	5:30-7:30 p.m.
March 14	5:30-7:30 p.m.
March 13-15	5:30-7:30 p.m.
March 13-15	5:30-7:30 p.m.
	March 13-15 March 13-15 March 13-15 March 13-14 March 13 March 13 March 14 March 14 March 13-15

Spring: Special Dates

Patriot's Day observed: Monday, April 17

Memorial Day observed: Monday, May 29

Final Examination Period: Monday-Saturday June 12-17

Commencement: Saturday, June 17

Summer Quarter Registration Dates for Classes that begin Monday, June 19

Registration for entire Summer Quarter:

Boston

Monday-Thursday

June 5-8

9:30 a.m.-7:00 p.m.

Burlington

Monday-Wednesday

June 5-7

5:30-7:30 p.m.

Second Summer Quarter Registration Dates for Classes that begin Monday, July 24

Registration for second five-week term:

Boston

Monday-Tuesday

July 10-11

9:30 a.m.-7:00 p.m.

Burlington

Monday

July 10

5:30-7:30 p.m.

Summer: Special Dates

Independence Day observed:

Tuesday, July 4

Labor Day observed: Monday, September 4

Final Examination Period: Last class session of each term

We're Here to Help You.

Programs That Work For You

Naturally, Northeastern University offers all the traditional academic programs you expect from a large university, including timely and innovative programs in Business Administration, Criminal Justice and Security, Health Professions and Sciences, and Liberal Arts. Among these programs are five bachelor's degree concentrations in business that carry the extra prestige of full accreditation by the American Assembly of Collegiate Schools of Business.

Many students come to Northeastern University to take specific, job-related courses or to prepare for professional licensing exams. To serve these students, we have developed more than fifty certificate programs. In most cases, these programs incorporate or build on the major concentration courses required in each of

our professionally focused undergraduate degree programs.

Northeastern also offers practical, part-time associate degree programs for students who are seeking a first-rate, first-level college degree, as well as bachelor's degrees in all four areas: Business Administration, Criminal Justice and Security, Health Professions and Sciences, and Liberal Arts.

The "Write" Skills To Empower You

The purpose of University College has always been to provide the adult student with educational opportunities designed to enrich personal and interpersonal experiences and to prepare the student for success in his or her chosen field. This purpose is, of necessity, many-faceted, and often quite career-specific. Nevertheless it is our belief that every University College experience should

rest on a strong foundation of communication skills and that writing skills in particular should be cultivated continually as critical

to each student's overall progress.

We believe that writing can be singled out for such universal attention because a student who has learned to write well has also learned to think clearly, and therefore has learned how to learn. This is a skill that transcends subject area, a tool that can be brought to bear in any situation, with the inevitable result of affording each student continuing self-respect and the respect of others.

This is why we are determined to make University College "The Write Place," that is, a place where our students will be given every

opportunity to improve their writing skills and to employ them as tools for success in their academic, professional and personal lives. We understand the need our students have to gain an edge in a complex society, and we have developed the "write" means to help them attain such an advantage. Some call this Write Place campaign "a vehicle for empowerment." As true as that may be, we prefer to consider it as our tribute to the creative potential of our students.

... Get to Where You Want To Be

Faculty Steeped in Knowledge and Experience

A course is only as good as its teacher. That's why University College carefully selects both full-time Northeastern University faculty and practicing professionals from other academic institutions as well as a wide array of specialized fields for its teaching staff of 1,000. Bringing an extra dimension into our classrooms are corporate executive officers, published authors, established health professionals, artists, graphic designers, computer experts, lawyers, professors, and others. They offer students the benefit of their experience and current information about how careers in their fields are changing. Many have found teaching adults particularly rewarding and have expressed their pleasure at having such committed, hardworking, and enthusiastic students.

Students Who Bring Rich Experiences to Class

Approximately 12,000 adults come to University College every year to pursue a degree, update their careers with a certificate, or take a course in a subject that has long interested them. These adult students range in age from 18 to 80 and come from all walks of life: women re-entering the work force, young men and women seeking to start new careers, older people polishing their skills, people of every age intent on finishing an education that time or circumstances interrupted. All have one thing in common—they are making a change in their lives through their own actions, expanding their world by investing in themselves. This diversity is a source of stimulation and enrichment for all-students, faculty, and administration alike.

Schedules "in Sync" With Your Lifestyle

We know you're busy, and finding the time to continue your education can be a real challenge. To help you out, Northeastern not only schedules classes at twelve different locations in eastern Massachusetts, but also provides different course formats. While most courses are offered on a twelve week schedule, some courses are offered in five and six week formats to accommodate the complex lives of many adults. Also, for those of you who would like to accelerate the educational process, University College offers numerous intensive courses which are generally equivalent to two regular courses. These intensives can be found on our schedules almost every night and on weekends, and they are available at a reduced tuition rate.

Class Size Conducive to Learning

Everyone knows Northeastern is big. What many people don't realize is that because we operate at twelve different locations, our classes tend to be small. And many of our specialized degree and certificate programs enroll only small numbers of students because of their unique focus. Last year, our average class size was twelve students. Many classes ran with fewer students, and only 10 percent of all classes offered ran with enrollments larger than twenty-seven.

We're Here to Help You....

Counseling and Personal Career Search Activities To Bring Your Plans Into Focus

University College offers a wide range of career and academic counseling services to assist you in making both educational and career decisions. The College provides academic advisors and career counselors, offers credit and noncredit career-planning programs, and serves as a link to other student support services offered by Northeastern University.

Open House Programs

If you are thinking about enrolling in University College for the first time, you are encouraged to attend an Open House. Open Houses introduce potential students to the many University College programs and services designed to meet educational, job-related, and personal needs. They also orient new students to the University as a whole and address concerns that many adult, part-time students have about

- transfer credit
- international student applications
- course selection

- admission to degree programs
- certificate programs
- financial aid

Students currently enrolled in University College are also invited to attend an Open House.

Open Houses are ordinarily scheduled each quarter at selected campus sites at or about the same time that registration takes place. Details appear in the *Schedule Guide* for each term.

Academic Advising

Academic advisors are available by appointment to talk with University College students and prospective students about courses, transfer credit, degree requirements, career counseling referrals, and other matters of individual concern. Persons requiring any support services such as a sign language interpreter should mention this at the time the appointment is being made. Please refer to information on the Disabilities Resource Center for further information.

To make an appointment at a specific campus, please call the appropriate number, as listed below.

- Main Boston Campus: Advisors are available weekdays from 8:30 a.m. to 7 p.m.
 Call 617-373-2400 or TTY 617-373-2825 (for Deaf or hard of hearing).
- Burlington Suburban Campus: Call 617-373-2400. (Note: this is a Boston campus phone number)
- Downtown Boston Campus (89 Broad Street): Call 617-367-6373.
- All other branch locations: Advisors are available from 5:30 to 7 p.m. on the evenings when classes are in session. Call 617-373-2400 for an appointment.

During registration, the advising staff in Boston is available to meet with students on a walk-in basis from 9 a.m. to 7 p.m. Students may also call in with questions during these times. In addition, registration advisors are available at satellite campuses during most registration hours to assist students with course selection and to explain registration procedures.

..Get the Attention You Deserve

Tutorial Services

University College offers tutorial assistance in several subjects. Tutoring, which is on a one-to-one basis, provides an opportunity for student and tutor to focus on specific problems that might not have been covered during class time. You may request tutorial information from the Office of Academic and Student Affairs, 617-367-6373. A flyer describing tutorial services is also available at all campus locations.

Career Services to Guide You Through Your Next Transition

Career Development Courses

Often one of the strongest motivations for continuing education is the desire for career advancement or change. In order to help students develop career and educational planning skills, University College offers several three-quarter-hour and one-quarter-hour courses in career development. For complete information, see the course descriptions on page 170 of this Bulletin.

Career Services

The primary purpose of the Department of Career Services is to assist all students, alumni and members of the Northeastern University community in developing and implementing successful career plans. A career redirection team of three counselors trained in the career transaction needs of adults is available for all University College students. Recent trends (global economy, downsizing, outsourcing) have changed the world of work. The ability to project, prepare and manage change will determine your career success. For additional information contact:

Northeastern University Department of Career Services P.O. Box 895 Boston, MA 02117 617-373-2430

Office Hours: 120 Ryder Hall

Sept.-June: 8:30-4:30, Monday-Friday

In addition, the Career Resource Center, located in 124 Ryder Hall, is open until 7:00 p.m. most Tuesday and Wednesday evenings for counseling appointments and general use of print resources. Summer Quarter: 8:00-5:00, Monday and Thursday

8:00-7:00, Tuesday and Wednesday

Career Counseling

Career counseling is available to help matriculated students make sound career decisions. Depending on individual needs, career counseling might include planning a career or a career change, making decisions, setting short and long term goals, developing effective job search strategies or participating in videotaped mock interviews. Students decide with the counselor whether they need one or more sessions. Career counseling is by appointment in Boston, Dedham, or Burlington and may be arranged by calling 617-373-2595, TTY 617-373-2432.

Job Search Seminars

Whether you are a seasoned job hunter or a beginner, seminars are designed to prepare you to compete effectively in today's market. Meeting the demands of the current marketplace, seminar topics include self-assessment, the latest in job search strategies, how to target your resume and write dynamic cover letters, and how to prepare for successful interviewing. Seminars are offered during the day and evening hours throughout the year. Since space is limited, advance registration is required.

Evening seminars take place in Boston and Burlington and are announced in classes prior to the start of each series. Students who wish to participate in these seminars must reserve a place by calling the Department of Career Services at 617-

373-2428, TTY 617-373-2432.

Career Resource Center

The Career Resource Center, located in 124 Ryder Hall, provides a variety of services and resources:

 a book collection containing occupational information, resume and interviewing resources, job search guides and directories of employers and graduate schools;

a Job Bank containing current local, national, and international job

opportunities and internships;

 employer videos and files containing annual reports, product information and descriptions of entry-level position and training programs;

daily walk-in hours for assistance with resumes and correspondence.

Career Expos and Networking Events

University College students are welcome to attend Career Expos and Networking events held during the fall and winter quarters. This year's events will focus on specific academic themes and will include alumni networking programs. These students and alumni/ae will have the opportunity to meet informally with prospective employers and alumni/ae to discuss career options and job opportunities.

On-Campus Recruiting

All students receiving a bachelor's degree in the current academic year are eligible to interview with organizations recruiting on campus. Organizations typically range from larger international corporations to smaller non-profit organizations. The fall, winter and spring recruiting seasons attract 200 employers who conduct over 3,000 interviews.

Resume Matching

When employers notify us of professional vacancies, they often ask us to refer eligible candidates. The Department of Career Services, therefore, maintains a database of seniors and alumni/ae who are looking for career opportunities. Resumes of all candidates meeting the qualifications specified by the employer are forwarded for consideration. Employers then contact the candidates they wish to interview.

Northeastern National Career Network

The Northeastern National Career Network (NNCN) is a voluntary organization of Northeastern alumni/ae and other professional affiliates who are willing to share information on their career fields. NNCN members offer insight into industry trends, their own career experiences, an overview of their field and information on job opportunities. Whether you are an undergraduate trying to focus on your career direction or an alumnus/alumna or graduate student making a career change, NNCN members are an extremely valuable source of information and contacts. The NNCN materials are located in the Career Resource Center, 124 Ryder Hall.

Reciprocity

The Department of Career Services establishes reciprocal agreements with colleges and universities throughout the country to provide career assistance to our alumni/ae relocating outside of Massachusetts. We will write up to three letters on your behalf to other schools.

For additional information contact the Department of Career Services at 617-

373-2595, TTY 617-373-2432.

The Counseling Center

Students can receive confidential counseling and testing to address personal, educational, or career concerns. Assistance is available to all students during days and some evening hours at the Counseling Center. For information and appoint-

ments, call 617-373-2142 or drop in at 302 Ell Building.

People come to the Center for help with a variety of personal concerns. Anxiety and depression, adjustment reactions to college life, personal or family relationship concerns, drug and alcohol abuse, and sexual adjustment questions are among the issues that University College students may want to discuss with a professional therapist. The Center is committed to short-term therapy, with a maximum of twelve consecutive counseling sessions. If the Center cannot meet your needs, appropriate referrals are provided.

Academic and life skills development workshops are offered each term, generally during the day. The Study Skills Development Workshop helps students become more effective in organizing their time, taking notes, preparing for exams, and other areas of academic performance. Videotapes of this workshop and a Procrastination Workshop may be viewed at the Center during day or evening hours. Other workshops include Stress Management and Surviving Parental

Alcoholism.

With so many fields to choose from, students sometimes have difficulty selecting a major or a career. You may want help in defining your interests, abilities, and values. At the Center, education-vocational counseling usually involves an evaluation of your interests, aptitudes, abilities, values, and personality characteristics. Many kinds of tests, available at the Center, may be used in this process. Counseling is done on an individual basis.

Information and application packets for such standardized tests as the GRE, LSAT, GMAT, MAT, and CLEP exams are available at the Center. CLEP exams are given at the Center ten times each year to NU students, and the Center is also a national testing site for the LSAT, GMAT, MAT, and other exams. Call 617-373-

4142 for information.

The Disability Resource Center

The Disability Resource Center's (DRC) mission within the University is to enable people with disabilities equal access to higher education via support services and advocacy. The Center provides support services on an individual basis. Accommodations include but are not limited to: orientation, academic and

general counseling, and approval of HP parking.

Prior to receiving services, individuals who have both visible and hidden disabilities must voluntarily request to register their disability-related needs by opening a file with the DRC. Registering with the DRC is done by providing the DRC with recent diagnostic documentation of their disability. During the Center's registration process, services are individually designed to meet the student's needs. Support services are available for the following disability groups' needs but are not limited to: students who are learning disabled; students who are head injured; students who have mobility disabilities or are wheelchair users; students who are Deaf or hard of hearing; students who are blind or visually disabled; students with degenerative or chronic conditions and students with mental health disorders.

The Disability Resource Center meets with student organizations such as the Disabled Student Organization of Northeastern University, the Deaf Club and AD-IN Lead In. Call 617-373-2675 or TTY 617-373-2730 for assistance.

University College Offices

• General Information: 617-373-2400

TTY: 617-373-2825 (for the

Deaf only)

fax: 617-373-2325

- Office of the Registrar 120 Hayden Hall 617-373-2300 fax: 617-373-5351 Monday-Thursday, 8:30 a.m.-7:30 p.m. Friday, 8:30 a.m.-4:30 p.m.
- Boston Main Campus 180 Ryder Hall 360 Huntington Avenue 617-373-2400 TTY: 617-373-2825 (for the Deaf only) fax: 617-373-2325 Monday-Friday, 8:30 a.m.-8:30 p.m. Saturday, 8:30 a.m.-1 p.m.

NEWLOCATION!

- Downtown Boston Campus
 89 Broad Street
 617-367-6373
 617-373-8300 (in September)
 Monday-Thursday,
 7:00 a.m.-10 p.m.*
 Friday, 8:30 a.m.-4:30 p.m.*
 Saturday, 8:30 a.m.-1:30 p.m.
 - Burlington Suburban Campus South Bedford Road 617-272-5500 (after October 6 New telephone: 617-238-8400) fax: 617-272-8187 Monday-Friday, 8 a.m.-10 p.m. Saturday, 8:00 a.m.-12 noon
 - Burlington High School 123 Cambridge Street 617-270-1838 Monday-Thursday, 5:30-10 p.m.

- Dedham Campus
 Common Street
 617-320-8000
 Monday-Thursday,
 8 a.m.-10 p.m.
 Friday, 8:30 a.m.-4:30 p.m.
 Saturday, 8 a.m.-1:00 p.m.
- Framingham High School
 A Street
 508-877-2333
 Monday, Tuesday, & Thursday,
 5:30-10 p.m.
- Malden High School
 77 Salem Street
 617-322-1441
 Monday & Wednesday, 5:30-10 p.m.
- Marlboro High School
 Bolton Street
 508-485-4122
 Monday & Wednesday, 5:30-10 p.m.
- Marshfield High School
 Forest Street
 617-837-1835
 Tuesday & Thursday, 5:30-10 p.m.
- Milford High School
 31 West Fountain Street
 508-473-2565
 Tuesday & Thursday, 5:30-10 p.m.
- Westwood High School
 200 Nahatan Street
 617-329-3030
 Monday, Tuesday, & Wednesday,
 5:30-10 p.m.
- Weymouth Junior High School 360 Pleasant Street 617-335-9112 Monday-Thursday, 5:30-10 p.m.

^{*}Office hours may vary due to changes in class schedules.

Summer Office Hours

- Office of the Registrar 120 Hayden Hall Monday-Thursday, 8:30 a.m.-7:30 p.m.
- **Boston Main Campus** 180 Ryder Hall Monday-Thursday, 8:00 a.m.-8:30 p.m.

NEW LOCATION!

Downtown Boston Campus
89 Broad Street
Monday-Thursday,
7:30 a.m.-10:00 p.m.*

- **Burlington Suburban Campus** Monday-Thursday, 8:00 a.m.-10:00 p.m.
- Dedham Campus Monday-Thursday, 8:30 a.m.-10:00 p.m.
- Framingham High School Tuesday and Thursday, 5:30-10:00 p.m.
- Weymouth Junior High School Tuesday and Thursday, 5:30-10:00 p.m.
- *Office hours may vary due to changes in class schedules.

Policies and Procedures

Admissions

University College has an open enrollment policy that enables students to take most courses and certificate programs simply by registering for the course. Applications for admission, entrance examinations, and College Board Examination scores are not required. Credits earned for individual courses taken at University

College may be applied to a certificate or degree program.

However, students who are enrolled at University College and who decide to pursue a degree program must apply for admission to the program. Requirements include proof of high school graduation, a 2.0 q.p.a., completion of 18 q.h., and completion of the Critical Writing sequence. Special requirements apply to students entering degree programs such as the Associate in Science in Radiologic Technology, the Bachelor of Science in Business Administration, and Bachelor of Science in Nursing programs. For information on the admissions process for these programs, please see pages, 125-6, 72, and 122 respectively.

Students must be admitted to a degree program in order to be eligible for financial aid. See page 267 for information on obtaining financial aid. All international students must be admitted to a degree program in order to apply for an I-20 form. See page 17 for more information on international students. There is a

separate procedure for entering Certificate programs. See page 38.

Both degree and nondegree students are entitled to make use of the student support services offered by University College. Call 617-373-2400 or TTY 617-373-2825 for more information.

Registration

Students may register for courses by mailing or faxing the registration form available in the back of the *Schedule Guide* during the mail-in registration period or reporting to any University College campus during the registration periods that are scheduled each quarter. It is not necessary to register at the campus where a particular course actually meets; students may register at any campus for a course scheduled at any other campus. Attendance at class, even with the instructor's permission, does not constitute registration unless the student has filled out a registration form. To assure academic soundness, students may not register for courses after the second class meeting, except in rare cases by special permission of the instructor. Academic credit will not be awarded to students who are not properly registered. See the Academic Calendar on pages 3-5 for a complete registration schedule.

Courses listed in this Bulletin are not necessarily offered each quarter. Students may not be able to take all of the courses required for a particular program at any one campus location. Each Fall, Winter, Spring, and Summer quarter the list of courses being offered is printed in a University College Schedule Guide. Schedule Guides are distributed at all campus locations several weeks prior to registration. To request a

schedule by mail, call 617-373-2400 or TTY 617-373-2825.

Course Selection

Academic advisors (see page 8) are available by appointment at all campuses,

to help students plan their academic programs and select courses.

Students who have earned credits from other schools are urged to have their transcripts evaluated prior to the registration period to avoid duplicating coursework completed elsewhere. Students should allow at least four weeks from the time all transcripts have been received for processing transfer credit petitions. During the

official registration periods at all campuses, advisors are available without an appointment to answer general questions and to help students make initial course selections. Because the process of evaluating transfer credit is complex, students should not expect advisors to evaluate their petitions during advising appointments.

Attendance

University College expects students to meet attendance requirements in all courses to qualify for credit. Attendance requirements vary, and it is the student's responsibility to ascertain what each instructor requires. Absence from regularly scheduled classes may seriously affect the student's academic standing. If a student is consistently absent without having made arrangements with the instructor, the instructor may take this to mean that the student has withdrawn and may issue a final grade of "W." Permission to make up work missed because of absence may be granted by the instructor on presentation of a reasonable excuse.

Auditing Policy

Students are permitted to audit courses upon submitting the usual registration forms and on paying the regular tuition fees. There is no reduction in fees for auditing. An auditor may participate in class discussion, complete papers and projects, and take tests and examinations for informal evaluation. However, regardless of the amount or quality of work completed, academic credit will not be granted at any time for an audited course.

The student's decision to audit a course must be communicated in writing to the Registrar's Office prior to the fourth class meeting. Exceptions to this procedure cannot be approved without authorization by the University College Associ-

ate Director of Academic and Student Affairs.

Change of Address or Name

Change of address and/or name should be reported in writing both to the Registrar's Office, 120 Hayden Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, and to the Office of Academic and Student Affairs, 180 Ryder Hall. Legal documentation must accompany requests for name changes.

Class Changes

University College reserves the right to cancel, divide, or combine classes when necessary. Although this policy ensures that students in most cases will not be excluded from a class because it is oversubscribed, it also means that a course may be cancelled because of inadequate enrollment. Cancellations are more likely to occur among upper-level or advanced courses than among introductory courses. While students may register as late as the first week of class, cancellation decisions are based on pre-registration figures. You are therefore encouraged to register in advance to increase the likelihood that the courses you want will run. Seniors who are adversely affected by course cancellations should contact an academic advisor or their program office for help in identifying alternatives.

Credit Hours: Quarter-Hour Credit

Credit hours are assigned to a course based on the established educational standard of one credit hour for every three hours of student learning time per week over a term. Thus one hour of lecture or discussion plus two hours of individual study outside of class equals one credit.

Northeastern University operates on a quarter-hour credit system. A quarterhour credit is the equivalent of three quarters of a semester hour. Most University College courses are assigned three quarter hours (abbreviated "q.h.") of credit and meet for two hours and ten minutes each week.

Students who would like to take courses at Northeastern and then transfer these credits to another school are urged to receive permission from an advisor at the other school prior to registering, especially since many other schools operate

on a semester calendar.

Examinations

Tests are scheduled throughout each quarter at the option of the instructor and are regarded as part of the term's coursework. A final examination is held at the end of each quarter in each course unless an announcement is made to the contrary. The procedure for making up final examinations missed due to student absence may be found on page 31.

Homework

The specific work required for each course in University College is determined by the instructor. In general, University College students are expected to spend an average of six to eight hours per week outside of class on assignments for each course. Students who are absent are responsible for obtaining their homework assignments from their instructors or from other students. Homework assignments are not available from the Office of Academic and Student Affairs.

International Students

Northeastern University is authorized under Federal law to enroll nonimmigrant alien students. International Student Applications must be filed by all non-immigrant students. Because the process of applying to University College is complex, deadlines for completed applications are well in advance of the start of each term:

Dead	lline	for	Term Starting
Oct. Jan.	7, 1994 7, 1994 6, 1995 il 7, 1995		Sept. 1994 (Fall) Jan. 1995 (Winter) April 1995 (Spring) June 1995 (Summer)

Students who miss the deadline for a given term will need to defer attendance to the following term. Proficiency in English is a prerequisite to admission and is determined by achieving a 550 on the TOEFL exam, by an assessment interview or by testing administered by the English Language Center. There is also an application fee of \$75.00.

Questions may be directed to the Office of Academic and Student Affairs, 180 Ryder Hall, 617-373-2400 (TTY 617-373-2825) or to the International Student Office,

270 Holmes Hall, 617-373-2310.

International students who are resident aliens in the U.S. must file an International Credentials Evaluation Form for admission and/or transfer credit and must provide proof of their resident alien status (green card). There is an evaluation fee of \$45.00 if international high school and college transcripts are involved. Questions may be directed to the Office of Academic and Student Affairs. (See page 27, Evaluation of International Educational Credentials, for further details.)

Course Load Policy

It is recommended that new students and/or students who are working full-time not take more than 12 quarter hours of credit per term. The average course load for a student working full-time is 6 q.h. per term. Students who are not working, or whose work schedules allow, may take up to 18 q.h. per term without special permission. Any student wishing to take more than 18 q.h. in a given term must file a course overload petition with the Office of Academic and Student Affairs at least one week prior to the start of the term. In no case may a student with a quality point average under 2.0 take more than 12 q.h. per term.

Petition for Course Overload forms are available from the Office of Academic

and Student Affairs, 180 Ryder Hall, 617-373-2400 or TTY 617-373-2825.

Pass/Fail Courses

Students may register for one *open elective* course per quarter on a pass/fail basis and may not take more than a total of five pass/fail courses at University College. To be eligible for pass/fail status, the student must be in good academic standing (have at least a 2.0 quality-point average) and must also meet all prerequisites for the course.

To be graded on a pass/fail basis, the student must file a Pass/Fail Petition and have it signed by the Associate Director of Academic and Student Affairs. Pass/Fail Petitions are available from the Office of Academic and Student Affairs, 180 Ryder Hall, 617-373-2400 or TTY 617-373-2825. Petitions must be received prior to the fourth class meeting. Please see also the section on Pass/Fail Grades, page 31.

Placement Tests

Placement tests are given to students enrolled in Critical Writing 1 (ENG 4100), Writing for the Professions 1 (ENG 4380), and Technical Writing 1 (TCC 4101) during the first class session. Some students may be requested to register for Elements of Writing (ENG 4011), a three-quarter-hour course offering additional help in writing, or English for International Students (ENG 4005, ENG 4006, ENG 4007).

Students registering for Contemporary Algebra 1 (MTH 4110) or Contemporary Algebra 1 and 2 Combination (MTH 4114) must take a placement test on the first night of class. The results will determine whether the student should take Introduction to Mathematics 1 and 2 (MTH 4001 and MTH 4002) prior to taking Contemporary Algebra 1. Students registering for College Algebra 1 (MTH 4107) must also take a placement test at the first class meeting. Some students may be asked to register for Technical Mathematics (MTH 4006) to help improve their math skills.

Prerequisites

Before registering for a course, you should read the course description in this *Bulletin* to determine if you need to have taken a prerequisite course. In order to ensure academic success, students are strongly advised to adhere to course prerequisites. Students with questions about prerequisites should contact the program office that administers the course or speak directly to the instructor. Students must have 80 q.h. in order to register for reserved section business courses. Students must have 130 q.h. to register for *Business Policy* (MGT 4450, 4451).

Special Students

University College students who wish to take Basic College courses may, in certain instances, enroll on a term-by-term basis. These students must obtain prior approval from both the Office of the Dean of the college offering the course and University College's Office of Academic and Student Affairs, 180 Ryder Hall. Students must collect both signatures on a Special Registration Form and submit the form to the Registrar's Office. Tuition is charged at the Basic College rate.

Basic College students who wish to enroll in University College courses must obtain prior approval from the academic dean of their college.

Withdrawal Policy

Students who wish to withdraw from a course *must* complete a Course Drop Form, available at any campus location. Students who withdraw from a course prior to the end of the seventh week of a term (please refer to the specific deadline in each *Schedule Guide*) will have no record of the withdrawal on their transcripts. Students may withdraw from the beginning of the eighth week to the end of the week prior to final examinations but the withdrawal *will be* noted on their transcripts. No withdrawals will be allowed for any reason during the week in which final examinations are given.

Academic Integrity

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic assignments and requirements. Integrity in academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. Consequently, all work submitted to meet course requirements, whether it takes the form of papers, examinations, laboratory reports, computer projects, quizzes, or any other work assigned, is expected to be the student's own work produced specifically for each course.

Students who fail to meet the responsibility of academic integrity as defined here are subject to disciplinary sanctions ranging from a reduction in grade or failure in the assignment or course to dismissal from the University. Details on the Code of Student conduct and complete disciplinary procedures are outlined in the

University College Student Handbook.

Academic Monitoring

Student grades are monitored at least once each academic year, usually after the end of spring term. Nondegree students, undeclared majors, and unadmitted students whose quality-point averages fall below 2.0 are contacted by the Office of Academic and Student Affairs and are offered all possible assistance. These students may also be subject to academic review, probation, and dismissal from University College when such action is warranted.

Students who feel they would benefit from academic assistance are encouraged to work closely with an academic advisor. Students may make appointments

by calling 617-373-2400 or TTY 617-373-2825.

Academic Standing Committee

The University College Academic Standing Committee convenes at least once each month, and more often if necessary, to consider student academic grievances and appeals related to the academic policies and procedures contained in this *Bulletin*. The Committee has the power to dismiss students who do not meet the academic standards of University College. Complete procedures are outlined in the University College *Student Handbook*. Grievance letters may be addressed to the Dean's Office, University College, 295 Ryder Hall.

Disciplinary Action

The University Court has the authority to warn, censure, suspend, expel, or remove from the list of degree candidates any student who, because of disruptive, threatening, or illegal conduct or poor character, is considered an unsuitable member of the College community. The University Court is convened to hear a case when a member of the University College community charges a student with a violation of the Code of Student Conduct. Complete procedures are contained in the University College Student Handbook, which can be obtained at all campus locations or by calling 617-373-2400 or TTY 617-373-2825.

Student Records

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits students to inspect their records whenever appropriate and to challenge specific parts of them when they feel it is necessary. Specific details of the law as it applies to Northeastern are available in the University College Student Handbook.

Students' Rights and Responsibilities

The University subscribes to the view that all students have certain rights, freedoms and responsibilities. For these reasons, the University has adopted and published specific policies and procedures governing student rights and freedoms, general conduct, student discipline, grievance procedures, disclosure of information from student records, and University judicial procedures. Judicial and grievance procedures are related to issues of discipline and conduct, the right of students to appeal judgments of their academic performance, grievances based on the fact that a student is handicapped, and allegations of sexual harassment. All policies and procedures governing the above matters may be found in the University College Student Handbook. Copies are available in the Office of Academic and Student Affairs or by calling 617-373-2400 or TTY 617-373-2825. In general, copies are also available at each campus location.

Degree Program Policies and Procedures

Applying for Admission to a Degree Program

A student who wishes to be admitted to University College as a degree candi-

date must follow either Option 1 or Option 2 procedures as outlined here.

Students are urged to apply for admission as soon as they are eligible. Students *must* be admitted to a degree program in order to be eligible for financial aid. The admission process must be completed before the start of the term for which financial aid is being applied. Non-immigrant international students must also be admitted to a degree program and must follow the procedures outlined on page 17, International Students. International students who are resident aliens must follow the procedures outlined on page 27, Evaluation of International Educational Credentials.

Option 1

In general, students who want to apply for admission to a degree program must have:

 completed at least eighteen quarter hours of credit, which may include transfer credit, and must include English courses ENG 4100, ENG 4111, and ENG 4112 or their equivalents;

a minimum grade-point average of at least 2.0 (C) at University College

(i.e. successfully completed at least one U.C. course); and

 a high school transcript, diploma or a high school equivalency certificate (GED).

In addition to the above requirements,

Students who wish to apply to a Bachelor of Science in Business
 Administration (BSBA) degree program must also have completed 80 q.h.
 of credit, MTH 4110 and 4111 (Contemporary Algebra 1 and 2 or their
 equivalents), and one social science course.

Students who wish to apply to the Bachelor of Science in Nursing (BSN) degree program should also note the additional admission requirements on

page 122.

• Students who wish to apply to the Associate in Science in Radiologic Technology must file special application materials with the Radiologic Technology Office (617-373-2818).

Students who meet these requirements may file an application for admission in the Office of Academic and Student Affairs or at any branch campus. Applications may also be submitted by mail. Call 617-373-2400 or TTY 617-373-2825 to obtain an application. Students will be notified of their acceptance by mail.

Option 2

Students who must apply for admission but do not meet the above requirements should:

arrange an admission interview with an academic advisor, by calling 617-373-2400 or TTY 617-373-2825, (617-367-6373 Downtown; 617-373-2400 Burlington and other satellite locations);

complete an Option 2 application for admission and bring it to the

interview;

 bring an official copy of the high school transcript or GED certificate to the interview; and

bring official copies of any college transcripts to the interview.

Interviews may be arranged at the Main Boston, Downtown Boston, Burlington, Dedham, Framingham, Milford, and Weymouth campuses only.

Bachelor of Science in Business Administration (BSBA) candidates are not eligible for admission under Option 2. These students will be placed in Associate degree programs until they have met the Option 1 requirements for the BSBA degrees.

Students who have been admitted to a degree program under Option 2 will have their transcripts reviewed after one academic year to ensure that they are making satisfactory academic progress. Satisfactory academic progress is defined

as follows:

 completion of at least eighteen quarter hours of University College or transfer credit. This credit must include English courses ENG 4100, ENG 4111, ENG 4112, or their equivalents, and

a minimum grade-point average of at least 2.0 (C) at University College.

The Office of Academic and Student Affairs will notify the Office of Financial Aid of those students who are not making satisfactory academic progress. Students who have not completed the above requirements within one year will be reverted to unadmitted status.

Academic Probation

All students are monitored at least once each academic year, usually after the end of spring term. Students majoring in Nursing are also reviewed on a quarterly basis by the Academic Standing Committee of the College of Nursing. Students in the Radiologic Technology Program are monitored on a continuing basis. Radiologic Technology students whose grades fall below acceptable levels are subject to sanctions imposed by the Program Director and may be asked to leave the program without a probationary period. Students who have been admitted to a degree program must maintain an overall quality-point average of not less than 2.0 (C) and a 2.0 (C) average in the required major courses in order to be considered in good academic standing. Any degree student whose overall quality-point average or major course average falls below 2.0 is placed on academic probation for a one-year period. Students receive formal notification of their probation and the level of performance required to return them to good academic standing. Students on probation are encouraged to meet with their assigned advisor at least once per term

Students who do not raise their overall quality-point average or major concentration to 2.0 within the probationary period will have their cases referred to the University College Academic Standing Committee for review. This Committee has the power to remove students from their degree programs but allow them to continue taking courses at University College, or to dismiss them from University College.

Students who have been dismissed from University College must petition the Academic Standing Committee no sooner than one year from the date of dismissal

if they wish to return to University College.

Additional Degree Status

Any student who has received a bachelor's degree from University College and wishes to earn a second bachelor's degree must fulfill an additional 45 quarter hours in residence after full completion of the first degree, at least 12 quarter hours of which must be in the new major concentration. At present, dual undergraduate degrees or dual majors are not available at University College.

A student who has already received an associate's or bachelor's degree from University College and who wishes to earn a second degree at the associate's level must fulfill an additional 24 quarter hours in residence after full completion of the first degree, at least 6 quarter hours of which must be in the new major concentration.

In either case, the additional degree and major must be distinctly different from the previously conferred degree. This policy does not apply to students earning an associate's degree who wish to go on for a bachelor's degree. Students interested in additional degree status are urged to first meet with an academic advisor.

Certificates Contained within Degrees

When a certificate is contained within a degree program (such as economics or graphic design), the grouping of certificate courses is treated like all other courses in terms of overall and major quality point average and the student receives a diploma only. However, if the student wishes to receive both a diploma and a certificate, the higher standard for certificate courses (minimum 2.0 in each certificate course) will apply. Students must file a certificate completion petition separately in order to receive the certificate.

Change of Major

Students wishing to change majors within University College should file a Change of Major Petition with the Office of Academic and Student Affairs, 180 Ryder Hall. Petitions are available at all campus locations or by calling 617-373-2400 or TTY 617-373-2825. Students who have received an associate's degree who are now working toward a bachelor's degree should be sure to change their majors to their new programs.

Changes in Requirements

The continuing development of University College requires frequent revisions. When no undue and unusual hardship is imposed on students because of these changes, students are expected to meet the requirements of the most current Bulletin. If a particular student finds it impossible to meet those requirements, the Bulletin for the year in which he or she declared a major is binding. University College makes every effort to inform students who are admitted to a degree program of changes in the curriculum.

Academic programs, course content, and rules and regulations are subject

to change without notice.

Course Substitutions

Students may request to replace a required course in an academic program with another comparable course. Although such requests are not encouraged, the University recognizes that students may occasionally have very good reasons for requesting such substitutions. Students must complete a Petition for Course Substitutions and submit it to the Office of Academic and Student Affairs. Petitions are available at each campus location or by calling 617-373-2400 or TTY 617-373-2825. Petitions are routinely forwarded to the appropriate program director. The program director reviews the request and notifies the student of the outcome. A copy of the completed request is kept in the student's file in the Office of Academic and Student Affairs.

Dean's List

All degree candidates who have taken a minimum of 18 quarter hours during the fall, winter, spring, and summer quarters, and who have completed this coursework with a quality-point average of 3.25 or better with no "I" grades, grades below C-, and no pass-fail grades (except where there is no alternative or where required by the program) are placed on the Dean's List. These students receive certificates of commendation from the Dean of University College after the summer quarter has ended. See page 33 for information on graduation with honor.

In Absentia Status

If a student moves beyond a reasonable commuting distance from University College or its branch campuses and has completed one hundred thirty-five or more quarter hours of credit (at least 75 q.h. of which must have been taken at University College), the Associate Director of Academic and Student Affairs will consider a petition to allow the student to complete his or her requirements for a University College degree at another approved college. The remaining courses must be completed within two years of the date of official in absentia status approval. The student must submit course descriptions to the Associate Director for approval prior to taking the courses.

Status Reports

The Office of Academic and Student Affairs provides status reports for students who want to know where they stand in a particular academic program. Status Report Request forms are available at all campus locations and by calling 617-373-2400 or TTY 617-373-2825.

No more than one status report for the same program will be issued to a student in a given academic year. Requests are processed on a rolling basis.

Status reports are issued automatically

· when issuing the first transfer credit award and

• when the student is changing majors.

Special Studies

Qualified students may have the opportunity to take up to six special studies. Those who meet the specifications described below may take a combination of:

two advanced tutorials

one field work

· three independent studies or

three honors programs.

Petitions for these studies are available in the Program Offices, located on the second floor of Ryder Hall. Petitions should be filed at least six weeks prior

to the quarter in which the special study is to be taken.

Most special studies are taken under the direction of a faculty advisor who will meet with the student at least three times during the quarter, and will be available for frequent phone conferences. The language and lab tutorials will meet weekly. Students may request a specific faculty member. However, no special study may proceed without the Program Director's approval.

Special studies are not offered in all subject areas. To find out if they are offered in your area of interest, check the course descriptions for your program

in this Bulletin.

Before petitioning for a special study, you may wish to consult with your program office. In many cases, taking a full course will be of greater value to you.

Advanced Tutorial: The Advanced Tutorial is designed primarily for students with declared majors who have been unable to take a needed upper-level course in the usual format because the course has not been available for two consecutive years. The Advanced Tutorial is essentially a full course taken independently under the supervision of a faculty advisor who will provide a syllabus, test the student's progress, and ascribe a grade. With the exception of languages and a few labs, Advanced Tutorials are 3 q.h. credits each.

Students may take no more than two Advanced Tutorials and should have

completed 87 q.h. before petitioning.

Field Work: Field Work courses are designed to enhance career development by allowing students to earn credit for the application of their academic studies to experiences in the work place. Field Work courses are offered for qualified Business students and certain Liberal Arts majors. Please refer to individual course descriptions for details, including prerequisites.

A student must have a 3.0 cumulative average to be eligible for field work and may take only one quarter of Field Work for 6 q.h. credits. Each student shall make his or her own arrangements for doing Field Work at an approved work site, and shall spend a minimum of fifteen hours per week at the site,

whether on a paid or volunteer basis.

Each student shall meet with a departmental Field Work advisor at least five times per quarter in order to plan the project, monitor the student's progress, and present and discuss a final written report. The student's grade shall be dependent upon the quality of the experience as demonstrated by reports, work products, and other documentation and upon discussions between the University College faculty advisor and the work site supervisor.

<u>Independent Study:</u> The Independent Study is an opportunity for degree students who have completed 96 q.h. and maintained a 3.0 q.p.a. to undertake special research, reading, or experimental study projects in areas related to their major. In addition to filing a petition, interested students should submit a study proposal for the Program Director's approval. The proposal should include a detailed outline of the objectives and plan of study, and should be accompanied by a supporting statement from the faculty member under whose direction the study will take place. Students may take up to three Independent Studies at 3 q.h. each. Usually these courses would count toward major elective requirements.

Honors Program: The Honors Program is similar to the Independent Study, with two exceptions: the student must have a 3.5 q.p.a. to be eligible, and submit a more in-depth work product to earn the additional 1 q.h. credit.

Students may take up to three Honors Courses at 4 q.h. each. Usually these

courses would count toward major elective requirements.

Please Note: Students may not take more than three of either Independent

Studies or Honors Programs.

Internships for Journalism and Graphic Arts Students (1 q.h. credit)
These internships are designed to give certificate and degree students an opportunity to obtain supervised professional experience related to their certificate or concentration courses at an on-site location. Upon satisfactory completion the student will be awarded 1 q.h. of credit. The course may be taken three times and may not be substituted for requirements.

To be eligible, a student must have completed the prerequisites for the given internship with a grade of at least C, and the internship site must be approved by the Liberal Arts Program Director. The student shall spend a minimum of eight hours a week at the site whether on a paid or volunteer

basis.

Each student shall meet with the University College faculty advisor to discuss the relationship between the on-site experience and the coursework and to present a final written report. For further information, call 617-373-2416.

Transfer Credit Policies and Procedures

Transfer Credit Policy

Students may transfer credit from accredited institutions of higher education when courses completed are applicable to the student's program in University College. The minimum course grade acceptable for transfer credit is C, or 2.0 on a four-point scale. Regardless of the source (APL, CLEP, PEP, noncollegiate instruction, coursework at other schools), the total amount of transfer credit that may be awarded may not exceed 128 quarter hours. Courses for which transfer credit has been awarded may not be repeated at University College without a reduction in the transfer credit award. An accredited institution of higher education is an institution having recognition and membership in one of the six regional accrediting associations recognized by the Council on Post-Secondary Accreditation.

Transfer Credit Procedure

Students who would like to obtain an evaluation of credits earned from another institution must file a Transfer Credit Petition with the Office of Academic and Student Affairs. The student must then write to the registrar of the institution previously attended and request that an official transcript (one bearing that institution's seal) be forwarded to the Office of Academic and Student Affairs, University College, 180 Ryder Hall, Northeastern University, 360 Huntington Avenue, Boston, MA 02115.

Upon receipt of official transcripts, the Office of Academic and Student Affairs issues an evaluation of all credits as they apply to the student's program in University College. Students should allow at least four weeks for processing transfer credit petitions from the point when all tran-

scripts have been received.

Since the process of evaluating transfer credit is complex, students should not expect evaluations of their transcripts during advising appointments. Official awarding of credit is recorded on the student's University College transcript when admission to a degree program is approved. Students who wish to be admitted to a degree program may indicate this on the transfer credit petition and should attach proof of high school graduation (high school transcript, copy of diploma or GED certificate). Please see page 21 for admissions requirements.

Validation of Required Upper-Level Business Courses for Transfer Credit

It may be necessary for students entering the Bachelor of Science in Business Administration (BSBA) degree program to validate required upper-level business courses that they have taken outside the framework of the program.

The Bachelor of Science in Business Administration degree programs offered by University College conform to all standards established by the American Assembly of Collegiate Schools of Business (AACSB). AACSB has been recognized by the Council for Post-Secondary Accreditation and by the United States Office of Education as the sole accrediting organization for university bachelor's and master's degree programs in business administration.

Validation is the set of procedures that tests whether an upper-level course completed in the lower division of a bachelor's degree program should be accepted for transfer credit in the upper division of a bachelor's degree program recognized and approved by the AACSB.

In general, students are able to validate previously earned course credits by taking a sequential course, a department-approved examination, or a CLEP (College Level Examination Program) or PEP (Proficiency Examination Program) examination.

For more information on course validation, see page 72. Students should talk with a University College academic advisor for information about the

validation of upper-level business courses for transfer credit.

Validation of Knowledge in Nursing

The College of Nursing endeavors to assess the clinical knowledge and skill of R.N. students in a variety of ways. Among these are standardized examinations developed by nationally recognized testing services. Upon successful completion of these examinations, R.N. students are eligible to register for clinical nursing courses in which the ability of the student to apply nursing knowledge in the clinical area is validated. When the student has demonstrated achievement of both theoretical and clinical knowledge in nursing through these mechanisms, academic credit will be awarded.

Evaluation of International Educational Credentials

United States citizens and international students with Resident Alien status who have international high school or college credentials must file an International Educational Credentials Form and pay a \$45.00 evaluation fee. An evaluation for purposes of admission and/or transfer credit is issued by the Office of Academic and Student Affairs. Requirements include completion of an interview and receipt of the completed form, official copies of all transcripts and translations into English and a check or bank draft for \$45.00 payable to Northeastern University. The official assessment of international educational credentials is made in accordance with current standards for awarding transfer credit at University College or as recommended by the Center for International Higher Education Documentation.

International students with non-immigrant status must file an International Student Application (see page 17, International Students) and will have

any transfer credit evaluated as part of that process.

Course(s) at Another College or University

Students already enrolled at University College who want to complete one or more courses at another institution may file a Prior Approval for Transfer Credit form to ascertain whether the course they wish to take is acceptable and equivalent to the University College course. A course description should be attached to the petition. Students may take courses elsewhere without prior approval, but do so at their own risk, as the course may not transfer into University College. There is a total limit of 128 q.h. of transfer credit from all sources. Also, the senior residency requirement stipulates that students must take their last 24 q.h. for an A.S. or last 45 q.h. for the B.A., B.S. or B.S.B.A. degree at University College. (See page 33.)

Credit by Examination

University College awards credit by examination, provided the examination does not duplicate previously earned academic credit. Credit is granted for successful completion of examinations currently available through the College Level Examination Program (CLEP) of the College Entrance Examination Board and through the Proficiency Examination Program (PEP) of the American College Testing Program. Both programs have been designed to help students obtain college-level credit for knowledge acquired through nontraditional means, such as on-the-job training, educational television, or correspon-

dence, extension, or independent study. The passing score for University College programs is 500 on general examinations and 50 on subject examinations. This score is established by University College and is independent of the American Council on Education recommendations. Information about these programs is available from the Office of Academic and Student Affairs at University College and from the Northeastern University Counseling Center.

Modern Language Proficiency Examination

Students may be eligible to receive a maximum of 12 q.h. of credit for proficiency in a modern language. Examinations are currently offered in French, Spanish, German, and Italian. Students should contact the Liberal Arts Program office, 617-373-2416, for more information or an application form.

Assessment of Prior Learning (APL)

University College students may obtain up to 18 q.h. of APL credit in specified academic disciplines for knowledge gained through prior learning experiences, whether work-related or personal.

Specifically, students may be eligible for APL credit if they have accrued a foundation of knowledge and skills equivalent to the content of courses in the

following areas:

 liberal arts (ART, ASL, CMN, DRA, ECN, ENG, HST, JRN, MUS, PHL, POL, PSY, SOA, SOC, TCC);

health professions and sciences (BIO, CHM, HMG, HRA, HSC, MLS, RAD,

REC); and

business (MIS, RE, and TRN only).

The primary method for documenting prior learning is through the assessment of a student portfolio, although in some instances an examination will

also be required.

The student must submit an Application for Assessment of Prior Learning, along with a non-refundable \$75 application fee made payable to Northeastern University. The application fee covers assessment and processing costs and is not tied to the granting of credit. Applications are available at 180 Ryder Hall, at any satellite location, or by calling 617-373-2400 or TTY 617-373-2825. Applications should be returned to the Associate Director of Academic and

Student Affairs, 180 Ryder Hall.

The application portfolio should include a written narrative, accompanied by documentation, to support the claim for prior learning credit for one or more courses. Assistance in portfolio planning is available from academic advisors in the Office of Academic and Student Affairs. Appointments for this purpose can be made by calling 617-373-2400 or TTY 617-373-2825. In order to prepare documentation, students may want to request the *Guide to Portfolio Development for the APL Program* from the Office of Academic and Student Affairs and review course syllabi available from the appropriate Program Office. Documentation may include such evidence of accomplishment as published materials, writing samples, or copies of artistic work. Whenever possible, students should link prior learning to University College courses. However, when the appropriate course is critical to the academic soundness of a program, the student may be required to take the course, but may, in addition, receive APL credit as an elective credit in the related subject area.

Applications will be forwarded to the appropriate Program Office where faculty, consultants, and program office staff will review them. Students will be notified if further documentation or an examination is necessary. Decisions on the applications will be forwarded to the Associate Director of Academic and

Student Affairs. Please allow at least two to three months for processing.

Students will be notified in writing of the outcome. Any credit awarded will

appear as transfer credit on the transcript.

Students will be permitted to enter the APL program only after all traditional sources of transfer credit have been fully utilized. Students will not receive credit for courses that normally would not transfer to University College. If a course has a CLEP, PEP, or challenge examination available, students will be required to take the exam. Credits earned through the APL program may be applied to certificate programs as transfer credit, within the limit designated for the certificate.

Students are encouraged to apply for APL credit as early as possible in their program. All previous college credits must be transferred and a status report completed by the Office of Academic and Student Affairs before an APL application can be submitted. Portfolio evaluations take approximately two to three months to process, and must be completed six months prior to graduation.

Any student wishing to pursue APL credit should contact an advisor in the Office of Academic and Student Affairs, 617-373-2400 or TTY 617-373-2825, to

begin the application procedure.

Credit for Extra-Institutional Learning

Extra-institutional learning is learning that takes place outside the sponsorship of legally authorized and accredited post-secondary educational institutions. The term applies to learning acquired from formal courses sponsored by associations, governments, business, and industry.

In awarding credit for extra-institutional learning, University College uses the National Guide to Educational Credit for Training Programs published by the American Council on Education, and College Credit Recommendations: The Directory of the National Program on NonCollegiate Sponsored Instruction,

published by the New York Board of Regents.

Students applying for credit for extra-institutional learning must submit a Transfer Credit Petition and provide official credentials from the sponsoring noneducational organization to the Office of Academic and Student Affairs. The credit may be applied toward degree requirements at University College if recommended in the *National Guide* or the *Directory*, provided credit is not otherwise obtainable through CLEP or PEP (see Credit by Examination page 27).

Grading System Policies and Procedures

Grading System

A student's work in each course is evaluated by the instructor, who awards a letter grade at the end of the quarter. This grade is officially recorded by the Registrar's Office. The grades and symbols used are given below, together with the numerical equivalents used for computing quality-point averages:

Α	(4.000)	C.	(2.000)	I	Incomplete
A-	(3.667)	C-	(1.667)	L	Audit (no credit)
B+	(3.333)	D+	(1.333)	S	Satisfactory (pass/fail grade)
В	(3.000)	D	(1.000)	U	Unsatisfactory (pass/fail grade)
B-	(2.667)	D-	(.667)	X	Incomplete (pass/fail grade)
C+	(2.333)	F	(O)	+	Grade not received

Change of Grade Policy

The period for clearing any grade (including "I" grades) is restricted to one calendar year from the end of the quarter in which the course was originally taken. Thus any outstanding tests should be taken, and papers submitted at least three weeks prior to the deadline. "I" grades outstanding for twelve months or longer shall remain permanently on all records. Requests for exceptions to this policy must be made in writing to the Program Office that administers the course. Call 617-373-2400 (TTY 617-373-2825) if you are unsure of who to contact.

Grade Reports and Transcripts

All efforts are made to mail grades prior to the beginning of the following quarter. A supplementary grade report is issued when a missing grade or a grade change is received. University regulations prohibit issuing grades by telephone. Grade reports of degree candidates indicate both their quarterly quality-point average and their cumulative quality-point average. Problems with grades not received (*) or grade changes that have not been posted on transcripts should be addressed to the Program Office that administers the course.

Students may obtain a transcript of their grades by making a request in writing to the Registrar's Office, 117 Hayden Hall, Northeastern University, Boston, MA 02115. Unofficial transcripts are issued free of charge when requested in person only. Official transcripts bearing the University seal cost \$2. Call (617) 373-2302 for

further information.

Incomplete ("I") Grades

The "I" grade, or incomplete, may be given only when the student fails to complete a major requirement of a course, such as a term paper or a final exam, but has been in regular attendance. Students who have missed a substantial number of class meetings without the instructor's permission receive a grade of "W." An instructor may decide that a student has done so poorly in the course that even a perfect grade in a make-up final examination could not raise the grade from "F." In this case "F" is the proper grade, regardless of the missed final examination.

All deficiencies must be made up in the manner prescribed by the instructor no later than one year following the recording of the "I" grade. Students requesting an exception to this policy must petition the Program Office that administers the course. To remove an "I" grade, the instructor must file a change of grade form with the program office. A student who elects to make up an "I" grade by taking the same course over again will be given a new grade and will be billed accordingly. The original "I" grade will remain on the student's record with a "repeat" designation.

Missed Final Examinations

Students who miss a final examination are given a grade of "I" (incomplete) unless the student has done so poorly in the course that even a perfect grade on a make-up final could not raise the grade from "F," in which case an "F" shall be given as the proper grade. Students do not automatically have the right to make up a missed final examination. Students must petition for this privilege and pay a fee of \$50 for each make-up examination. Petitions are available at each campus location or by calling 617-373-2425. Students are notified whether or not their petitions have been approved prior to the date of the make-up examination.

Students who make up a missed final examination will have the appropriate letter or pass/fail grade substituted for the "I" grade on their transcripts. Please

see previous section for more information about "I" grades.

Pass/Fail Grades

Satisfactory completion of work in all courses taken on a pass/fail basis is designated on the transcript by the letter "S." Unsatisfactory work is designated on the transcript by the letter "U." Any unsatisfactory grade must be handled according to the existing policy of University College but may never be cleared by enrolling in the same course on the basis of the pass/fail system of grading.

An incomplete in a course taken on a pass/fail basis is designated by the letter "X" on the transcript and is treated according to the normal procedure for grades

of incomplete.

Please see also Pass/Fail Courses on page 18.

Quality-Point Average

To obtain the quality-point average, the numerical equivalent of each grade received is multiplied by the credit hours earned, the quality points are added together, and the total quality-points are divided by the student's total quarter hours. An example follows:

Grade	Numerical	Credit	Quality
Achieved	Equivalent	Hours	Points
A	4.000	3	12.0
B-	2.667	3	8.0
С	2.000	6	12.0
F	0.000	3	0.0
		(15)	(32.0) TOTALS

The quality-point average is equal to the total quality points (in this case, 32.0)

divided by the total credit hours (15), which comes to an average of 2.13.

Pass/fail grades (S, U, and X), incompletes (I), and audits (L) are not included in the quality-point average. Similarly, transfer credits are not included in quality-point averages. However, the total earned hours appearing on the student's transcript include both transfer credits and "S" grades. Transfer credits only appear if a student has been formally admitted to a degree program.

A cumulative quality-point average below 2.0 is unacceptable and does not allow a student to continue in University College or to receive a degree from Northeastern University. The "F" grade is a failure and requires repetition of the course in its entirety. University College also has a requirement that the q.p.a. in the major concentration courses must be 2.0 or better.

Repeating a Course

"F" Grades

Students who receive an "F" in a required course must repeat the course at full tuition rate. The original course and grade will remain on the record, but "repeat" will be noted next to it and the new, not the old, grade will be computed into the q.p.a.

Improving Q.P.A.

Students may repeat any course to improve their grade. The original course and grade will remain on the record, but "repeat" will be noted next to it. In all cases it is the most recently received grade which will be counted in the q.p.a., whether it is higher or lower than the original grade. There is no reduction in tuition fees for repeated courses.

Duplication of Courses

Sometimes students inadvertently repeat a course. Students will not receive credit twice for the same course; therefore, students are advised to be careful when selecting courses, as course titles and/or numbers sometimes change. One way for students to insure that coursework will not be duplicated, particularly if courses were taken under the old numbering system, is to petition for an updated status report.

Graduation Policies and Procedures

Residence Requirement

Every candidate for the bachelor's or associate's degree must fulfill the minimum residence requirement, which is defined as the satisfactory completion of at least forty-five quarter hours of coursework for the bachelor's degree or twenty-four quarter hours of coursework for the associate's degree, in University College immediately preceding graduation. At least twelve of the forty-five quarter hours, or six of the twenty-four, must be in the candidate's major field of study.

Because of this residence requirement, students may not take courses at any other institution during their senior year for the purpose of transferring credit.

Students whose enrollment in a degree program is interrupted for a period of one year or more will be reinstated in that program or a comparable program at the time of re-entry into University College.

At present, dual undergraduate degrees or dual majors are not available at University College. See the section on Additional Degree Status (page 22) for the

residence requirement if pursuing a second degree.

Graduation Requirements

Except for certain health professions programs, the requirement for graduation from University College is 174 quarter hours for a bachelor's degree and 87 quarter hours for an associate's degree, with attainment of an overall quality-point average of 2.0 (C). Students who have transferred in a substantial amount of elective credit may have more than 174 q.h. or 87 q.h. upon completion of their programs. In addition, the student must have a 2.0 average in the required major courses. Bachelor of Science in Business Administration degree candidates must also meet all validation requirements. Although the credits allowed for acceptable work completed elsewhere by transfer students count toward fulfillment of quantitative graduation requirements, neither the credits nor the grades earned in such courses are included in the quality-point computations for graduation. Course requirements for each degree are outlined in this *Bulletin*.

Graduation with Honor

Graduation with honor is reserved for bachelor's degree candidates who have completed a minimum of 72 quarter hours of work at University College and who have demonstrated distinctly superior academic achievement as evidenced by the following quality-point averages:

Graduation with Honor	3.25 to 3.49
Graduation with High Honor	3.50 to 3.74
Graduation with Highest Honor	3.75 to 4.00

Transfer credit is not considered in determining honors.

Credit by Examination During the Senior Year

CLEP or PEP examinations (see page 27) may be taken by students during their final year of study provided they have met the forty-five or twenty-four quarter-hour residence requirement for graduation described above. Because of the time it takes for CLEP and PEP examinations to be graded and returned to the University, students requesting June graduation must take their CLEP and PEP examinations no later than the winter quarter of their senior year, and students requesting September commencement must take their examinations no later than the spring term of their senior year.

Senior Status Procedure

Each student who intends to graduate in either an Associate's or a Bachelor's Degree program during the current academic year must notify the Office of Academic and Student Affairs of his or her intention to graduate by filing for a senior status report. Commencement is held twice a year, in June and September.

Senior status reports are issued to assist students with selecting the courses they need to complete their program requirements. Seniors are encouraged to request their senior status reports during the summer prior to the academic year in which they plan to graduate. Petition forms are available at each campus location or by calling 617-373-2400 or TTY 617-373-2825. At this time, seniors are also encouraged to clear up missing grades, incompletes, transfer credit, admissions, or other problems.

Once a Senior Status Report has been completed, the Office of Academic and Student Affairs mails a Commencement Data Card, which the student *must* return by the date specified on the card to be guaranteed inclusion on the official gradua-

tion list.

Academic Audit of Seniors

The Office of Academic and Student Affairs conducts an academic audit of all seniors approximately one month prior to graduation. During this audit, academic problems such as incompletes, missing grades, missing courses, or validation problems are noted. Every effort is made to relay this information to the student through mail and telephone contact. If these problems remain unresolved, seniors are notified by certified mail that they have failed to qualify for their degree.

Commencement Ceremony

Information concerning commencement is mailed to all seniors who have returned a Commencement Data Card (see Senior Status, above) during the spring term, for June graduation, or the summer term, for September graduation.

Attendance at Commencement for all University College degree candidates is optional. Students who do not attend Commencement should receive their diplo-

mas by mail approximately six to eight weeks after the ceremony.

Students must have cleared all academic, financial, and/or disciplinary deficiencies in order to graduate. Students who have questions about the commencement ceremony should direct them to the Commencement Office, 617-373-3639.

Overview of Academic Programs

At University College, your options are almost unlimited. Our programs of study can take you in any direction you determine toward the fulfillment of your professional or personal objectives. You may enroll as a student pursuing a degree program or as a non-degree student taking a single course or a special program.

Our programs leading to the Bachelor of Science, Bachelor of Science in Business Administration, and Bachelor of Arts degrees provide opportunities for cultural and professional development equivalent in quality and scope to those offered in the conventional four-year college enrolling full-time students. The

bachelor's degree requires 174 quarter hours of credit or more.

Programs leading to the Associate in Science degree enable students to establish a knowledge base in business administration, criminal justice and security, health professions and sciences, or liberal arts. The associate's degree requires 87 quarter hours of credit and is equivalent to the conventional two-year, or junior community college program in scope and quality. University College also offers certificate programs in a wide range of disciplines.

Degree and certificate programs are offered in the following areas. (The

numbers indicate the page on which detailed curricula appear.)

Business Administration

Accounting
Associate in Science 75
Bachelor of Science in
Business Administration 85
Certificate 40
Advanced Accounting Certificate 58

Business Administration Associate in Science 76 Certificate 42

Compensation and Benefits Management Certificate 43

Computer Programming and Software Development Certificate 44

Computer Programming and Systems Analysis Certificate 45

Computer Systems Specialist Certificate 46

Corporate Travel Management Certificate 47

Finance
Associate in Science 77
Bachelor of Science in
Business Administration 87
Certificate 48

Food Service Management
Certificate 49
National Institute for the
Food Industry Certification 62

Hotel and Restaurant Management Associate in Science 78 Certificate 50

Human Resources Management Associate in Science 79 Certificate 51

International Business and Culture Certificate 51

Joint BSBA/MBA 74

Management
Bachelor of Science in
Business Administration 89
Certificate 52

Management Information Systems Associate in Science 80 Bachelor of Science in Business Administration 91

Marketing Associate in Science 81 Bachelor of Science in Business Administration 93 Certificate 53

Microcomputer Software Certificate 53

Personal Financial Planning Certificate 54 Preparation for National Certification APICS 61 CTL 61 NAPM 62 National Institute for the Food Industry Certification 62

Preparation for State Certification Real Estate Salesperson's Exam Preparation 63

Purchasing and Materials Management Associate in Science 82 APICS Examination Preparation 61 NAPM Examination Preparation 62 Certificate 55

Real Estate Salesperson's Examination Preparation 63

Small Business Management and Entrepreneurship Certificate 55

Transportation and Physical Distribution Management Associate in Science 83 Certificate 56

UNIX for Business Certificate 57

Technology

Operations Management Associate in Science 95 Certificate 53

Operations Technology Bachelor of Science 97

Criminal Justice and Security

Computer Crime and Security Certificate 43

Corrections
Associate in Science 99
Bachelor of Science 100

Legal Studies Certificate 52

Policing
Associate in Science 101
Bachelor of Science 102

Security
Associate in Science 103
Bachelor of Science 104

Health Professions and Sciences

Advanced Environmental Science Certificate 59

Biological Science Bachelor of Science 108

Biotechnology Associate in Science 110 Bachelor of Science 111

Environmental Studies Certificate 48

Health Information Administration Bachelor of Science 113 Post Baccalaureate Certificate 114

Health Management
Bachelor of Science 115
Option in Continuing Care
Administration 116
Option in Community Health
Management 116
General Option 116

Health Science Bachelor of Science 118

Human Development Services Certificate with concentrations in:

Adolescent Care 50 Gerontology 50 Infant/Child Care 51

Medical Laboratory Science Associate in Science 121 Phlebotomy Certification Preparation 62

Nursing Bachelor of Science in Nursing (in affiliation with the College of Nursing) 123

Paramedic Technology Associate in Science 124 EMT/Basic Program 61 Paramedic Technology Certificate 124

Radiologic Technology Associate in Science 125 Speech and Language Pre-professional Preparation Certificate 63

Teacher Preparation in Health Education 66

Liberal Arts

Acting Certificate 40

Advertising Certificate 41

American Sign Language and Deaf Studies Certificate 41

American Sign Language-English Interpreting Certificate 60

Arts and Sciences Associate in Science 130

Business Administration Minor 129

Business Communication Certificate 42

Communication Studies (formerly Speech Communication) Certificate 43

Computer Graphic Design Certificate 44

Economics Bachelor of Arts 131 Bachelor of Science 131

Electronic Composition Certificate 47

English Bachelor of Arts 132 Bachelor of Science 133 Fine Arts Bachelor of Arts 134 Bachelor of Science 134

Graphic Design and Visual Communication Associate in Science 135 Bachelor of Science 136 Certificate 49

History Bachelor of Arts 137 Bachelor of Science 138

Journalism Advertising Certificate 40 Public Relations Certificate 54

Liberal Arts/Business Minor Bachelor of Science 140

Liberal Studies
Bachelor of Arts 142
Political Science

Bachelor of Arts 144
Bachelor of Science 146

Psychology Bachelor of Arts 148 Bachelor of Science 148

Public Relations Certificate 54

Sociology-Anthropology Bachelor of Arts 149 Bachelor of Science 149

Teacher Preparation Programs for Elementary and Secondary Education 64-65

Technical CommunicationsBachelor of Science 151

Technical Writing Certificate 56

Writing
Certificate 57

Course descriptions are listed in alphabetical order by subject area beginning on page 155.

Certificate and Special Programs

Study Options with Proven Practical Dividends

While many students attend University College to obtain an Associate or Bachelor Degree, or to take specific courses, a growing number of adults have discovered the benefits of enrolling in one of University College's more than 50 certificate and special preparation programs. Each program offers a foundation of knowledge designed to provide the expertise needed for the attainment of specialized professional skills. (Please see the next page for a full listing.)

Since these popular programs were first offered in 1983, they have provided

numerous benefits. Specifically, they:

convey a cohesive base of job-related skills

enhance career prospects within and outside the setting of one's employment

offer marketable expertise to make career changes feasible

prepare for licensing exams in selected specialized areas

 present "manageable" learning alternatives that may be completed within one or two years

may be applied to degree programs at any time during or after certificate

studies.

Easily Converted into Career Transition Programs

If you are thinking of making a career change in the near future, you might benefit from adding one or two of the following enhancements to your certificate studies:

• CD 4100 Managing Career Decisions (3 q.h.) (formerly INT 4110)

• CD 4102 Career Decision Making (1 q.h.) (formerly INT 4114)

CD 4104 Career Planning/Self Marketing (1 q.h.) (formerly INT 4112)

 Free job search seminars offered by the Department of Career Services (call 617-373-2430 for times and places). Other Career Development courses can be found on pages 170-171.

For example, you might take CD 4100, CD 4102, or CD 4104 as a first step to determine which career options are "right" for you. The Department of Career Services will offer a wide variety of job search seminars geared to assess your strengths, offer resume and interview strategies, and keep you updated on the changing marketplace (see pages 9-11). Combined with a certificate program these modest initiatives can take you a long way on the road to realizing your career dreams.

How to Proceed

Students entering a certificate program should file a certificate petition with the Office of Academic and Student Affairs. When you have completed all coursework toward your certificate, you should file a Certificate Completion Form. Petitions are available from the Office of Academic and Student Affairs, 180 Ryder Hall, 617-373-2400 or TTY 617-373-2825, and at all campus locations.

For assistance in determining course prerequisites or in deciding on the appropriate program, call 617-373-2400 or TTY 617-373-2825 for an appointment with an academic advisor, or call the number listed for each individual certificate

program.

Most certificate programs are designed to facilitate transfer into a related degree program. In addition, a limited amount of transfer credit for introductory courses taken at another school may be applied toward certificate program requirements. The number of transfer credits permitted varies by certificate but is usually limited to 9 quarter hours, or approximately one-third of certificate course requirements. Similarly, a limited number of course substitutions may be requested. (See page 23 for details.)

Students who choose to complete a second certificate in a subject related to the first may find that the two have certain courses in common. However, a second certificate will not be awarded if more than 50 percent of the coursework is dupli-

cated.

Beginning with courses taken Fall term 1987, students must achieve a grade of C (2.0) or better in each course in order to receive a certificate.

Certificate Programs

- Accounting
- Acting
- Advanced Accounting*
- Advanced Environmental Science*
- Advertising
- American Sign Language and Deaf Studies
- ASL-English Interpreting*
- Business Administration
- Business Communication
- Communication Studies
- Compensation and Benefits Management
- Computer Crime and Security
- Computer Graphic Design
- Computer Programming and Software Development
- Computer Programming and Systems Analysis
- Computer Systems Specialist**
- Corporate Travel Management
- Electronic Composition
- Environmental Studies
- Finance
- Food Service Management

- Graphic Design and Visual Communication
- Health Information Administration Post-Baccalaureate *
- Hotel and Restaurant Management
- Human Development Services
- Human Resources Management
- International Business and Culture
- Legal Studies
- Management
- Marketing
- Microcomputer Software
- Operations Management
- Paramedic Technology**

 P
- Personal Financial Planning
 Public Political
- Public Relations
- Purchasing and Materials Management
- Small Business Management and Entrepreneurship
- Technical Writing
- Transportation and Physical Distribution Management
- UNIX for Business
- Writing

*These programs are at the intermediate or advanced levels. Check the program and course descriptions to determine your eligibility. **Special application procedures necessary.

- Special Programs
 - APICS (Preparation for National Certification)
 - CTL (Preparation for National Certification)
 - EMT/BASIC
 - NAPM (Preparation for National Certification)
 - National Institute for the Food Industry Certification

- Phlebotomy Certification Preparation
- Real Estate Salesperson's Exam Preparation
- Speech and Language Pre-professional Preparation
- Teacher Preparation Programs for Elementary and Secondary Education
- Teacher Preparation in Health Education

Certificate Programs

Accounting Certificate Program



Designed to enable students to gain a foundation of knowledge in the accounting field, this program teaches how to compile, analyze, and prepare critical business and financial records.

				quarter hours		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9		
ACC 4301	ACC 4302	ACC 4307	Intermediate Accounting 1, 2, 3	9		
ACC 4310			Cost Accounting 1	3		
FI 4301			Principles of Finance	3		
Total Quarter Hours (Possible transfer credit: 9 quarter hours) 24 For more information, call 617-373-2418.						

Acting Certificate Program



Created to allow students to lay a foundation for further acting experience and career opportunities, this program encourages participation in a variety of drama courses.

			quarter hours	
DRA 4101	•	Introduction to Theatre	3	
DRA 4140	DRA 4141	Introduction to Acting 1, 2	6	
DRA 4151		Acting for the Camera*	3	
DRA 4152		Acting for Commercials*	3	
DRA 4153		Acting for Voice Overs*	3	
DRA 4250		Theatre Movement	3	
DRA 4260		Theatre Speech	3	
Total Quarter Hours (Possible transfer credit: 9 quarter hours)				
For more info	ormation, call 617-373	-2416 or 617-373-2423.		

Advanced Accounting Certificate Program



See page 58 for details.

*3 1/2-hour studio.

Advanced Environmental Science Certificate Program



See page 59 for details.

Advertising Certificate Program



Intended to build professional experience in fields such as copywriting, layout and design, and corporate advertising, this program stresses a combination of creative and hands-on practical skills.

	quarter h	ours
JRN 4112	Writing for Media 1	3
JRN 4349	Advertising Basics	3
JRN 4350	Advertising Copywriting	3
JRN 4351	Advertising Practice	3
ART 4115	Graphic Design for Non-Majors*	3
ART 4143	Advertising Design*	3
MTH 4520	Statistical Thinking	3
MKT 4301	Introduction to Marketing 1	3
WIK1 4501	Introduction to Marketing 1	3
Choose one elective from the following:		
MKT 4302	Interduction to Maulatine 2	(0)
	Introduction to Marketing 2	(3)
MKT 4310	Advertising Management 1	(3)
JRN 4300	Photojournalism	(3)
ART 4160	Basic Photography*	(3)
MGT 4101	Introduction to Business and Management 1	(3)
JRN 4910	Internship in Journalism**	(1)
Total Quarter Hours (Possible trans	for anodity 0 assertes house)	27
		27
For more information, call 617-373-2416 o	r 01/-3/3-2423.	
*3 1/2-hour studio.		

American Sign Language and Deaf Studies Certificate Program

**Recommended but not counted toward certificate completion.



Developed to introduce signing and give students the chance to practice and gain confidence in communicating with Deaf people, this program allows students to explore the language and culture of the American Deaf community. (For a more advanced program, please see ASL-English Interpreting Certificate, page 60.)

		quarter hours
ASL 4101	ASL 4102	American Sign Language 1*, 2*
ASL 4201	ASL 4202	Intermediate American Sign
		Language 1*, 2
ASL 4301	ASL 4302	Advanced American Sign Language
		Proficiency 1, 2
ASL 4412		American Deaf Culture 3
ASL 4410		Linguistics of American Sign Language 3
ASL 4411		Deaf History (3)
or		or
ASL 4413		ASL Literature (3)

Total Quarter Hours (Possible transfer credit for ASL 4101, ASL 4102, ASL 4201 12 quarter hours; all other credits must be completed in residence; a 3.0 cumulative grade-point average is required to receive this certificate.)

*A language proficiency examination is available for these courses; the credits will show as transfer credit. If you have tested out of any ASL courses, you are encouraged to take both Deaf History (ASL 4411) and ASL Literature (ASL 4413).

For more information call Marina McIntire, ASL Program Director, 617-373-3064 (voice only) or 617-373-3067 (TTY only).

33

ASL-English Interpreting Certificate



See page 60 for details.

Business Administration Certificate Program



Intended to help students get started or catch up on the basics of business, this program is often taken as a foundation for further study of the various facets of business administration.

		quarter hou	ırs
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
HRM 4301	HRM 4302	Organizational Behavior 1, 2	6
MKT 4301		Introduction to Marketing 1	3
MGT 4101	MGT 4102	Introduction to Business and Management 1, 2	6
MGT 4358		Today's Management Issues	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours) For more information, call 617-373-2418.

24

Business Communication Certificate Program



Built around the premise that effective communication in a variety of business situations is a key factor in career satisfaction and advancement, this vital program sharpens verbal and writing skills for today's business world.

1		
	quarter	hours
CMN 4102	Group Discussion	3
CMN 4152	Conducting Interviews in the Professions	3
CMN 4153	Techniques of Persuasion	3
CMN 4154	Negotiation Skills	3
CMN 4155	Organizational Communication	3
CMN 4251	Business and Professional Speaking	3
JRN 4335	Public Relations Basics	(3)
or	or	` ′
MKT 4335	Public Relations 1	(3)
MGT 4101	Introduction to Business and Management 1	3
Choose one writing course from the following	ing:	
ENG 4380	Writing for the Professions 1	(3)
JRN 4112	Writing for Media 1	(3)
TCC 4101	Technical Writing 1	(3)
or choose any acceptable substitute in writ	ten communication, with prior approval	
of the department consultant or program d		
Total Organian Harris (Passible transfer	m and dit. O meanton b acces	25
Total Quarter Hours (Possible transfe	· · · · · · · · · · · · · · · · · · ·	27
For more information, call 617-373-2416 or 6	17-373-2423.	

Communication Studies Certificate Program (formerly Speech Communication Certificate)



Designed to offer students the opportunity to enhance their career prospects in all professional pursuits, this program concentrates on acquiring strong communication skills.

	quarter hour	rs
CMN 4101	Fundamentals of Human Communication	3
CMN 4102	Group Discussion	3
CMN 4111	Voice and Articulation	3
CMN 4150	Self-Concept and Communication	3
CMN 4151	Listening	3
CMN 4152	Conducting Interviews in the Professions	3
CMN 4153	Techniques of Persuasion	3
CMN 4154	Negotiation Skills	3
CMN 4251	Business and Professional Speaking	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours)

For more information, call 617-373-2416 or 617-373-2423.

Compensation and Benefits Management Certificate Program

Created to offer students the opportunity to learn about the increasingly important and complex role of benefits management, this program focuses on today's business organizations.

	o	uarter hours
HRM 4310	Human Resources Management*	3
HRM 4309	Labor Relations*	3
HRM 4321	Wage and Salary Administration	3
HRM 4322	Employee Benefits*	3
HRM 4333	Employment Rights*	3
HRM 4334	Human Resource Information System	s 3
HRM 4342	Strategic Planning in HRM	3
Human Resources Management (HRM) course of your choice	3
Total Quarter Hours (Possible tr For more information, call 617-373-241		24

*This certificate may be taken by students who have also completed the Human Resources Management Certificate. Asterisked courses do not have to be repeated.

Computer Crime and Security Certificate

Intended to give the law enforcement and/or security professional expertise in the burgeoning field of computer crime and security, the coursework covers entry level familiarity with computers and computer systems all the way through criminal investigation procedures. Pertinent case studies of computer crimes and investigations will be examined.

			quarter hours
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4201		Criminal Investigation 1	3
CJ 4411		Electronic Information Security	3
CJ 4412		Computer Crime and Security	3
CJ 4420		Advanced Computer Application in	
		Criminal Justice	3
COM 4101		Introduction to Computer Literacy*	4
MIS 4350		Auditing Data Processing	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours)

For more information, call Professor Burstein at 617-373-3057.

*Should be taken at the beginning of the student's course of study.

Computer Graphic Design Certificate Program



Designed to address the needs of both novice and professional designers seeking careers in the area of electronic graphic design, the core curriculum of this program is structured for students with little or no computer experience. Professional designers, subject to the approval of the Program Director, may substitute more advanced design or computer electives for up to three basic design courses. Some courses will be offered only on the Boston campus. Up to nine hours of APL (Assessment of Prior Learning) credit can be applied to the certificate as transfer credit.

Students must take all other required courses before taking ART 4186.

	quarter ho	ırs
ART 4135	Design Fundamentals*	3
ART 4139	Color Theory and Practice*	3
ART 4140	Graphic Communication and Production	3
ART 4141	Graphic Design 1*	3 3
ART 4151	Typography	3
ART 4181	Introduction to Computer Graphics*	3
ART 4183	Electronic Publishing Systems*	3
ART 4184	Presentation Graphics*	3
ART 4185	Creative Imaging: Custom Computer	
	Design*	3
ART 4187	Advanced Computer Illustration*	3
ART 4186	Computer Graphic Design Portfolio*	3
ART 4910	Internship in Graphic Arts**	(1)
Total Quarter Hours (Possible transfer credit: 9 quarter hours)		
For more information, call 617-373-2416 or		
10.4 (0.1	•	

^{*3 1/2-}hour studio.

Computer Programming and Software Development Certificate Program



Designed to allow as much flexibility as possible, we leave the selection of courses for this MIS certificate up to you.

courses for any wife certaincate ap	o to you.	
Choose five courses from among the foll	lowing:	uarter hours
MIS 4236	Advanced PC Software	(3)
MIS 4273	PC DOS	(3)
or	or	` '
MIS 4282	Operating Systems Overview	(3)
MIS 4283	Introduction to Windows Programm	
MIS 4320	VAX Overview	(3)
MIS 4321	UNIX I	(3)
MIS 4342	Advanced Database	(3)
MIS 4360	Computer Privacy and Security	(3)
Choose three courses from among the fo	llowing:	
MIS 4221	COBOL Programming 1	(3)
MIS 4222	COBOL Programming 2	(3)
MIS 4235	Advanced COBOL Programming	(3)
MIS 4276	C Programming 1	(3)
MIS 4277	C Programming 2	(3)
MIS 4278	C Programming 3	(3)
MIS 4241	Programming in BASIC 1	(3)
MIS 4242	Programming in BASIC 2	(3)
MIS 4322	UNIX II	(3)
Total Quarter Hours (Possible trans	efor credit: 9 quarter hours)	24

^{**}Recommended but not counted toward certificate completion.

Computer Programming and Systems Analysis Certificate Program



Built to help students keep up with new developments in this fast-paced field, this program enhances career prospects by providing a concrete knowledge-base in programming.

			quarter	hours
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MIS 4221	MIS 4222		COBOL Programming 1, 2	6
MIS 4236			Advanced PC Software	3
MIS 4276	MIS 4277	MIS 4278	C Programming 1, 2, 3	9
MIS 4301			Structured Systems Analysis and Design 1	3
MIS 4302			Structured Systems Analysis and Design 2	3
T-1-1 0	4 II /D-	:		20
Total Qual	ter nours (P	ossible transfe	r credit: 9 quarter hours)	30

This certificate differs from the Computer Systems Specialist Program (described next) in that the courses for this certificate are regularly offered at all campuses and may be completed over a longer period of time than in the Specialist Program. For more information about both programs, call 617-373-2418.

Computer Systems Specialist Program



The Program

Designed to offer training to become computer systems specialists, this program is intended for students who are interested in entry-level programming positions in business and industry. The program addresses the career goals of individuals who have little or no academic or work-related background in computer programming. Students who successfully complete the program receive a Computer Systems Specialist Certificate.

Admission

Computer Systems Specialist Program candidates will be evaluated for acceptance into the program on the basis of their transcripts from high school or most recently attended college, their motivation and their expressed goals. Enrollment is limited. This program is offered only if a sufficient number of qualified candidates apply.

Time and Place

The program is scheduled to begin twice during the academic year, once in the fall and again in the spring quarter. Classes are scheduled for thirty-one weekends: at the Burlington Campus, Friday, 6 p.m. to 10 p.m., and all day Saturday, 9 a.m. to 5:30 p.m. and at the Downtown Boston Campus on Thursday and Saturday at the same hours.

Academic Credit and Certification

Upon satisfactory completion of the program, students will have accumulated forty-five quarter hours of academic credit, and will receive the program certificate. The credits represent 26 percent of the credits necessary for a bachelor's degree.

Placement Assistance

Although job placement is not guaranteed, most students who successfully complete the program find suitable employment. Placement services include individual counseling; job-search seminars on career opportunities, self-assessment, resume preparation, and interviewing skills; and resume referrals to employers.

For More Information

For more information about the program and an application form, contact the Business Administration Program Office, Northeastern University, University College, 360 Huntington Avenue, Boston, Massachusetts 02115, 617-373-2418.

Courses in the program are:

, ,	quarte	er hours
MIS 4103	Introduction to Data Processing	
	and Information Systems Intensive	6
MGT 4101	Introduction to Business and	
	Management 1	3
MIS 4231	COBOL Programming Intensive	6
MIS 4236	Advanced PC Software	3
MIS 4279	C Programming 1, 2 Intensive	6
MIS 4278	C Programming 3	3
MIS 4282	Operating Systems Overview	3
MIS 4305	Structured Systems Analysis and Design	
*	Intensive	6
MIS 4307	Communications and Networking	3
MIS 4321	UNIX I	3
MIS 4345*	Database Management Systems	3
Total Ouarter Hours		45

*For course description see MIS 4445.

Corporate Travel Management



Prepares students for the many facets of corporate travel management, a growing sector of business.

Required: TRN 4308 TRN 4309 TRN 4301 MGT 4101	Corporate Travel Management 1 Corporate Travel Management 2 Elements of Transportation 1 Introduction to Business and Management 1	quarter hours 3 3 3 3
Choose 4 courses from the following:		
TRN 4321	Transportation Negotiation	(3)
TRN 4303	Elements of Transportation 2	(3)
TRN 4350	International Transportation	(3)
TRN 4340	Air Transportation	(3)
TRN 4316	Carrier Management	(3)
TRN 4701	Independent Study in Travel	` '
,	Management	(3)
TRN 4900	Field Work in Travel Management	(6)
Total Quarter Hours (Possible transfer For more information, call 617-373-2418.	r credit: 9 quarter hours)	24-27

Electronic Composition Certificate Program



Designed to help students develop skills in starting up, advising, managing, and creating systems for the growing field of desktop publishing operations, this certificate program addresses a career that is "in demand."

	quarter	hours
ART 4135	Design Fundamentals*	3
ART 4139	Color Theory and Practice*	3
ART 4140	Graphic Communication and Production	3
ART 4141	Graphic Design 1*	3
ART 4151	Typography	3
ART 4181	Introduction to Computer Graphics*	3
ART 4183	Electronic Publishing Systems*	3
ART 4184	Presentation Graphics*	3
ART 4366	Promotional and Technical Publications:	
	Design and Production*	3
ART 4410	Electronic Imaging Systems*	3
ART 4910	Internship in Graphics Arts**	(1)
Total Quarter Hours (Po	ssible transfer credit: 9 quarter hours)	30

Total Quarter Hours (Possible transfer credit: 9 quarter hours)

For more information, call 617-373-2416 or 617-373-2423.

^{*31/2-}hour studio.

^{**}Recommended but not counted toward certificate completion.

Environmental Studies*



Developed for those concerned with the environment and those whose jobs deal directly with environmental issues, such as lawyers, journalists, and public relations professionals, this program addresses contemporary concerns. An extensive science background is *not* required.

	quarter hours
Introduction to the Earth Sciences:	
The Solid Earth	(3)
or	
Physical Geology	(3)
Conservation and the Nation	3
	3
	3
Wetlands	3
6 Ecology 1, 2, 3	9
	24
	or Physical Geology Conservation and the Nation Conservation and the Community Conservation Management Wetlands

For more information, call Dr. Malcolm Hill at 617-373-4381.

*See Advanced Environmental Science Certificate Program on page 59.

Finance Certificate Program



Intended to help students get the skills they need to assume more responsibility on the job, this program can help get you started on a finance career in banks, corporations, brokerage firms, schools, and government and social agencies, as well as help you advance to a management position.

			quarter hours
ACC 4101 ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301		Principles of Finance	3
FÍ 4302		Financial Management	3
FI 4310		Investment Principles	3
FI 4320		Credit Principles	3
FI 4325		Budgeting and Planning	3
Zumine de me (2 desire d'année de me me)			24
FI 4325		Budgeting and Planning	3

Food Service Management Certificate Program



Designed for current and potential restaurant owners and managers, this program teaches students to run cost-effective operations that meet professional standards.

		quarter hours
HTL 4301	Introduction to Hotel and	•
	Restaurant Management	. 3
HTL 4307	Food Service Sanitation	3
HTL 4308	Food and Beverage Cost Control	3
HTL 4304	Hotel and Restaurant Law	(3)
or	or	` '
HTL 4309	Managerial Accounting for the	
	Hospitality Industry	(3)
HTL 4320	Food Preparation (Intensive)*	6
HTL 4322	Consumer Food Preparation*	3
HTL 4324	Dining Room Beverage Operation	
	and Preparation*	3
HTL 4331	Professional Chef's Training*	6
Total Quarter Hours (Possible transfer	credit: 9 quarter hours)	30
*Special fee, see page 266.		

For more information, call 617-373-2418.

Graphic Design and Visual Communication Certificate Program



Created to offer students a comprehensive background in graphic design and visual communication skills, this program is geared to individuals seeking entry into advertising, publishing, marketing, public relations, and media industries.

		quarter n	ours
ART 4135		Design Fundamentals*	3
ART 4139	, ,	Color Theory and Practice*	3
ART 4140		Graphic Communication and Production	3
ART 4141	ART 4142	Graphic Design 1*, 2*	6
ART 4143		Advertising Design*	3
ART 4151		Typography	3
ART 4181		Introduction to Computer Graphics*	3
ART 4367		Pictorial Imagery for the Graphic Designer*	3
ART 4251		Portfolio Development*	3
ART 4910		Internship in Graphic Arts**	(1)

Total Quarter Hours (Possible transfer credit: 9 quarter hours) 30 For more information, call 617-373-2416 or 617-373-2423.

*3 1/2-hour studio.

Health Information Administration Post-Baccalaureate Certificate



See page 114 for details.

^{**}Recommended but not counted toward certificate completion.

Hotel and Restaurant Management Certificate Program



Meant for those interested in developing a core of relevant management skills, this program is for those students particularly interested in entry into the people-centered hotel/restaurant field or for advancement in their present position.

		quarter hours
HTL 4301	Introduction to Hotel and	
	Restaurant Management	3
HTL 4303	Front Office Management	3
HTL 4304	Hotel and Restaurant Law	3
HTL 4307	Food Service Sanitation	3
HTL 4308	Food and Beverage Cost Control	3
HTL 4309	Managerial Accounting for the	
	Hospitality Industry	3
HTL 4313	Introduction to Tourism	3
HTL 4320	Food Preparation (Intensive)*	6
Total Quarter Hours (Possible transfe	r credit: 9 quarter hours)	27
*Special fee, see page 266.		

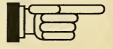
For more information, call 617-373-2418.

8

Human Development Services Certificate

Designed for those who wish to acquire specialized skills to more effectively deal with a specific client group, this program enables the student to choose a specialized track appropriate for his/her personal and/or professional development.

Required	quarter hou	ırs
Choose only one: PSY 4240 PSY 4241 PSY 4242	Development: Infancy and Childhood Development: Adolescence Development: Adulthood and Aging	(3) (3) (3)
Required CMN 4150 CMN 4225 CMN 4240 REC 4210 REC 4378	Self-Concept and Communication Family Communication Managing Interpersonal Conflict Psycho-social Aspects of Illness and Disability Professional Caregiving 1	3 3 3 3
Choose one of the following groupings:		
Adolescent Care, Required* REC 4101 REC 4215 REC 4379 SOC 4195	Therapeutic Recreation 1 Causes and Detection of Child Abuse Professional Caregiving 2 Drugs and Society	3 3 3 3
Gerontology, Required* HSC 4610 PSY 4243 SOC 4225 SOC 4235	Geriatric Nutrition Aging and Mental Health Social Gerontology Death and Dying	3 3 3 3



Infant/Child Care, Rec REC 4105 REC 4215 REC 4300 REC 4379	quired* First Aid Procedures Causes and Detection of Child Abuse Arts and Crafts** Professional Caregiving 2	2 3 3 3
	(Possible transfer credit: 9 quarter hours)	29-30

Human Resources Management Certificate Program



Developed to enhance skills to handle the changing aspects of employer/ employee relations, this certificate program addresses the rapidly changing and increasingly complex workplace.

		ي	quarter hours
HRM 4301	HRM 4302	Organizational Behavior 1, 2	6
HRM 4310		Human Resources Management*	3
HRM 4309		Labor Relations*	3
HRM 4321		Wage and Salary Administration	3
HRM 4322		Employment Benefits*	3
HRM 4325		Training and Development	3
HRM 4333		Employment Rights*	3
Total Quart	er Hours (Possible	transfer credit: 9 quarter hours)	24

For more information, call 617-373-2418.

*For more information call 617-373-3843.

**Special fee, see page 266.

24

*This certificate may be taken by students who have also completed the Compensation and Benefits Management Certificate program. Asterisked courses do not have to be repeated.

International Business and Culture Certificate Program



Created to blend analytic business skills with the practical insights needed to compete globally and take advantage of growing opportunities in the international marketplace, this certificate program can help American managers and professionals develop a new understanding of how business is conducted on a multi-cultural level.

		quarter hours
BL 4316	International Law	3
HRM 4347	Managing People in International	
	Settings	3
LNJ 4225	Japanese Culture	(3)
and/or	and/or	
LNR 4225	Russian Culture and Society	(3)
and/or	and/or	
MGT 4701	Independent Study 1	
	Culture of Choice	(3) 3 iness 3
MGT 4348	The Global Marketplace	3
MGT 4357	Cultural Issues in International Bus	iness 3

Foreign Language: Choice of 1) Spanish, 2) French, 3) Japanese, 4) German, or 5) Russian*

Total Quarter Hours (Possible transfer credit: 9 quarter hours)

*Students may be eligible to receive a maximum of 8 q.h. of credit for proficiency in a modern language. Language Exam Credit is considered for transfer credit. Examinations are currently offered in French, Spanish, and German. Students should contact the Liberal Arts Program Office, 617-373-2416, for more information or an application form.

Legal Studies Certificate Program



Designed to give a background in the evolution and concepts of criminal law, this certificate program examines the fundamentals of trial procedures, the rules of evidence, and the history and development of the American Constitution.

			quarter hours
CJ 4101		Administration of Justice .	3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4110		Constitutional Law	3
CJ 4114	CJ 4115	Introduction to Law 1, 2	6
CJ 4118		Juvenile Law	3
CJ 4511		Survey of Criminal Evidence	3
Total Qua	rter Hours (Poss	sible transfer credit: 6 quarter hours)	24
For more in	formation, call Pro	fessor Burstein at 617-373-3057.	

Management Certificate Program

Developed to offer students the opportunity to earn skills in all areas of management, this program can be the key to career advancement in today's business world.

	quarter h	ours
HRM 4301	Organizational Behavior 1	3
MIS 4101	Introduction to Data Processing and	
	Information Systems 1	3
MGT4101 MGT 4102	Introduction to Business and	
	Management 1, 2	(6)
or	or	` `
MGT 4105	Introduction to Business and Management	
	(Intensive)	(6)
MGT 4103	Introduction to Business and Management 3	3
MGT 4320	Managing Change	3
MGT 4329	Managing Small Businesses	3
MGT 4358	Today's Management Issues	3
Total Quarter Hours (Possible to	ransfer credit: 9 quarter hours)	24
For more information, call 617-373-24	118.	

Marketing Certificate Program



Created to help prepare students for a marketing career, this program reveals how to identify consumer needs, develop new products or services, determine prices, deal with customers, and design promotional strategies.

			quarter hours
MKT 4301		Introduction to Marketing 1	3
MKT 4302		Introduction to Marketing 2	3
MKT 4308		Direct Response Marketing	3
MKT 4310		Advertising Management 1	3
MKT 4315		Sales Management 1	3
MKT 4320		Marketing Management	3
HRM 4301	HRM 4302	Organizational Behavior 1, 2	6

Total Quarter Hours (Possible transfer credit: 9 quarter hours) For more information, call 617-373-2418.



24

27

Microcomputer Software Certificate Program

Designed for managers, administrators, and office support staff needing a comprehensive knowledge of microcomputer software either to foster promotion within their present organization or seek employment elsewhere.

			quarter hours
MIS 4101	MIS 4102	Introduction to Data Processing	
		and Information Systems 1, 2	6
MIS 4236		Advanced PC Software	3
MIS 4276		C Programming 1	3
MIS 4277		C Programming 2	3
MIS 4282		Operating Systems Overview	(3)
or		or	` ′
MIS 4273		PC DOS	(3)
MIS 4307		Communications and Networking	`3
MIS 4342		Advanced Database	3
MIS 4344		Business Presentation Graphics	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours) For more information, call 617-373-2418.



Operations Management Certificate Program

Developed to examine how to help companies achieve higher profits, this program focuses on how to operate at maximum efficiency and lowest cost.

	quarter l	nours
OM 4301	Introduction to Operations Management	3
OM 4302	Operations Analysis	3
OM 4314	Productivity Enhancement and	
	Quality Management	3
OM 4317	Purchasing and Materials Management	3
OM 4321	Operations Planning and Control	3
OM 4326	Operations Management Policy	3
MS 4332	Statistical Quality Control	3
PUR 4390	Just-In-Time Manufacturing (JIT)	3

Total Quarter Hours (Possible transfer credit: 9 quarter hours)
For more information, call 617-373-2418.

24

Paramedic Technology Certificate Program



See page 124 for details.

Personal Financial Planning Program



Created to enable students to manage their own finances, taxes, and investments.

		quarter	hours
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
ACC 4120		Essentials of Personal Income Taxation	3
FI 4101		Personal Finance	3
FI 4301		Principles of Finance 1*	3
FI 4306		Personal Insurance Planning	3
FI 4310		Investment Principles	3
RE 4301		Real Estate Fundamentals	3
Total Quart	er Hours (Possible	transfer credit: 9 quarter hours)	24
	rmation, call 617-373-		

*Prerequisites: ACC 4102 and ECN 4115, 4116.

Public Relations Certificate Program



Designed to emphasize concepts and techniques of handling information, organizing activities and events, researching and communicating, and solving problems related to such groups as employees, stockholders, and consumers, this program can help students gain entry into the fast-paced "public relations" world.

		quarter h	ours
JRN 4112	JRN 4113	Writing for Media 1, 2	6
JRN 4335		Public Relations Basics	3
JRN 4336		Public Relations Practices	3
JRN 4337		Public Relations Problems	3
JRN 4480		Copyediting	3
MTH 4520		Statistical Thinking	3
CMN 4153		Techniques of Persuasion	3
Choose one e JRN 4300 MGT 4101 MKT 4301 ART 4368 JRN 4910	lective from the following:	Photojournalism Introduction to Business and Management 1 Introduction to Marketing 1 Graphic Design for Media Internship in Journalism*	(3) (3) (3) (3) (1)
Total Quar	ter Hours (Possible transf	fer credit: 9 quarter hours)	27
For more info	ormation, call 617-373-2416 or	r 617-373-2423.	
*Recommend	led but not counted toward c	ertificate completion.	

Purchasing and Materials Management Certificate Program



Created to help students improve on-the-job productivity and reduce inventory, this program centers on planning, acquisition, and conversion.

		quarter h	ours
ACC 4101	ACC 4102	Accounting Principles 1, 2	6
MGT 4101		Introduction to Business and Management 1	3
PUR 4351	PUR 4352	Purchasing 1, 2	6
PUR 4357		Business Negotiations	3
PUR 4358		Materials Requirement Planning	3
PUR 4365		Production Activity Control	3
PUR 4370		Inventory Management	3
PUR 4390		Just-in-Time Manufacturing (JIT)	(3)
or		or	` ,
PUR 4395		Master Production Scheduling (MPS)	(3)
or		or	` ,
PUR 4396		Systems and Technologies	(3)
Total Quarte	er Hours (Possi	ble transfer credit: 9 quarter hours)	30
For more info	rmation, call 617-	373-2418.	

Small Business Management and Entrepreneurship Certificate Program



Developed as a thorough overview of small business operations, this program focuses on drawing up a comprehensive business plan, hiring employees, and keeping sound financial records.

		quarter hours
ACC 4101	Accounting Principles 1	3
MKT 4301	Introduction to Marketing 1	. 3
MKT 4310	Advertising Management 1	3
BL 4101	Business Law 1	3
HRM 4301	Organizational Behavior 1	3
MGT 4328	Creating New Ventures	3
MGT 4329	Managing Small Businesses	3
MGT 4340 MGT 4341	Small Business 1, 2	6
Total Quarter Hours (Possible transfer For more information, call 617-373-2418.	credit: 9 quarter hours)	27

Technical Writing Certificate Program



Designed to help students acquire writing skills for a career in a technical field, this program can also sharpen skills for a variety of writing professions.

		quarter l	nours
ART 4140		Graphic Communication and Production	3
MIS 4101	MIS 4102	Introduction to Data Processing	
		and Information Systems 1, 2	6
TCC 4101	TCC 4102	Technical Writing 1, 2	6
TCC 4105		Editing for Science and Technology	6 3
TCC 4301	TCC 4302	Computer Software Technical Writing 1, 2	6
Choose one c	omputer language:		
MIS 4221		COBOL Programming 1	(3)
or		or	` ,
MIS 4241		Programming in BASIC 1	(3)
or		or	, í
MIS 4276		C Programming 1	(3)
Total Quart	er Hours (Possib	le transfer credit: 9 quarter hours)	27
	•	73-2416 or 617-373-2423.	

Transportation and Physical Distribution Management Certificate Program



Built to provide students with a comprehensive background in the overall operation of transportation firms, this program looks specifically at rate determination, warehousing, and regulation and deregulation.

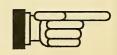
		quarter he	ours	
TRN 4301	TRN 4303	Elements of Transportation 1, 2	6	
TRN 4302	TRN 4304	Physical Distribution Management 1, 2	6	
MGT 4101		Introduction to Business and Management 1	3	
Transportation	on electives*	G .	9	
Total Quart	er Hours (Po	ossible transfer credit: 9 quarter hours)	24	
For more information, call 617-373-2418.				

*ATTENTION: Transportation and Physical Distribution Management Students

Students may use their 9 elective credits for developing a career track in one of the following areas:

Carrier Managem	ent (Choose 3)
TRN 4316	Carrier Management
TRN 4334	Private Trucking
TRN 4340	Air Transportation
TRN 4341	Commuter Transportation
TRN 4350	International Transportation and Distribution Management
Corporate Travel	Management (Choose 3)
TDN 4000	Company to Towns 1 Management 1

TRN 4308	Corporate Travel Management 1
TRN 4309	Corporate Travel Management 2
TRN 4701	Independent Study in Travel Managemen
TRN 4900	Field Work in Travel Management



Logistics (Choose 3)	
TRN 4305	Traffic Management 1: Rates and Tarriffs
TRN 4321	Transportation Negotiations
TRN 4325	Management of Warehouse Operations
TRN 4342	Transportation Loss, Damage and Other Claims
TRN 4350	International Transportation and Distribution Management
Transportation Policy (Choo	ose 3)
TRN 4321	Transportation Negotiations
TRN 4350	International Transportation and Distribution Management
TRN 4341	Commuter Transportation
TRN 4701	Independent Study (Transportation Policy)

UNIX for Business Certificate Program



Designed to enable students to develop a working knowledge of UNIX principles and proficiency in "C" programming, this program places students on the cutting edge of technology.

MIS 4282 MIS 4321 MIS 4276 MIS 4307 MIS 4301	MIS 4322 MIS 4277 MIS 4302	MIS 4278	Operating Systems Overview UNIX 1, 2 C Programming 1, 2, 3 Communications and Networking Structured Systems Analysis and and Design 1, 2	quarter hours 3 6 9 3	
Total Quarter Hours (Possible transfer credit: 9 quarter hours) 27 For more information, call 617-373-2418.					

Writing Certificate Program

For more information, call 617-373-2416 or 617-373-2423.



Created to allow students to investigate and practice different types of writing, this program can help develop the organizational and communication skills necessary for a variety of careers.

		quarter	hours
ENG 4349	ENG 4350	Expository and Persuasive Writing 1, 2	6
ENG 4352		Expository Communications	3
JRN 4112	JRN 4113	Writing for Media 1, 2	6
TCC 4101		Technical Writing 1	3
ENG 4356		Creative Writing	3
ENG 4363		Writing for the Marketplace	3
JRN 4522		Magazine Writing	(3)
or		or	
JRN 4560		Developing Writing Style	(3)
Total Ouart	er Hours (Possib	le transfer credit: 9 quarter hours)	27

Intermediate and Advanced Certificate Programs

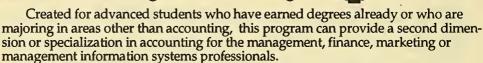
University College offers several certificate programs designed to meet the needs of students who have already completed a substantial body of college work. These programs all have specific prerequisites for entry and students should read the descriptive information provided to determine whether they are eligible.

Students wishing to enter one of these programs should file a petition with the Office of Academic and Student Affairs. If documentation of transfer credit is important for establishing that prerequisites have been met, copies of college transcripts should be attached to the petition. Petitions are available from the Office of Academic and Student Affairs, 180 Ryder Hall, 617-373-2400 or TTY 617-373-2825, and at all campus locations.

All certificate policies stated on pages 38-39 apply to Intermediate and Ad-

vanced Certificate Programs as well.

Advanced Accounting Certificate Program



This program is open only to students who have completed at least 80 quarter hours of college-level work. If you are new to University College, please attach proof that you have earned 80 q.h. to your "entering certificate petition." Students must meet the prerequisites for each course as outlined in the individual course descriptions. Students enrolled in the University College BSBA Accounting degree are not eligible to receive this certificate.

				quarter hours
ACC 4301	ACC 4302	ACC 4307	Intermediate Accounting 1, 2, 3	9
ACC 4408			Intermediate Accounting 4	3
ACC 4310			Cost Accounting 1	3
ACC 4411			Cost Accounting 2	3
ACC 4425	ACC 4426		Auditing 1, 2	6
ACC 4440	ACC 4441		Federal Income Taxes 1, 2	6
ACC 4400			Accounting Information Systems	3
m . 10 .				
Intal (hiar	or Hours (Po	sceible trancte	r credit: 9 quarter hours)	33

Advanced Environmental Science Certificate Program



Intended for upper-level science and engineering students who wish to enter the environmental field, this advanced certificate program is also appropriate as a post-baccalaureate certificate for professionals already working in science and/or engineering. Interested students should have a knowledge of calculus, physics and chemistry.

Choose a minimum of 24 quarter hours of coursework from the following courses.

BIO 4321 Soil Microbiology 3 CET 4350 Environmental Engineering 1* 4 ESC 4430 Soils and the Environment 3 ESC 4450 Introduction to Hydrology 3 ESC 4218 Groundwater 3 ESC 4219 Geochemistry of Groundwater 3 ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4 MGT 4354 Management and the Environment 3			quarter hours
ESC 4430 Soils and the Environment 3 ESC 4450 Introduction to Hydrology 3 ESC 4218 Groundwater 3 ESC 4219 Geochemistry of Groundwater 3 ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	BIO 4321	Soil Microbiology	3
ESC 4450 Introduction to Hydrology 3 ESC 4218 Groundwater 3 ESC 4219 Geochemistry of Groundwater 3 ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	CET4350	Environmental Engineering 1*	4
ESC 4218 Groundwater 3 ESC 4219 Geochemistry of Groundwater 3 ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4430	Soils and the Environment	3
ESC 4219 Geochemistry of Groundwater 3 ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4450	Introduction to Hydrology	3
ESC 4220 Wetlands 3 ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4218	Groundwater	3
ESC 4221 Environmental Geophysics 3 ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4219	Geochemistry of Groundwater	3
ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4220		3
ESC 4222 Geology and Urban Planning 3 ESC 4435 Air Quality 3 MET 4370 Fluid Mechanics A* 4	ESC 4221	Environmental Geophysics	3
MET 4370 Fluid Mechanics A* 4	ESC 4222	Geology and Urban Planning	3
	ESC 4435	Air Quality	3
MGT 4354 Management and the Environment 3	MET 4370	Fluid Mechanics A*	4
	MGT 4354	Management and the Environmen	t 3

Total Quarter Hours

24

*These courses are offered through the School of Engineering Technology. For more information, call Dr. Malcolm Hill at 617-373-4381.

American Sign Language-English Interpreting Certificate Program



The Program

Designed to offer students education and training as sign language interpreters, the American Sign Language-English Interpreting Certificate Program was developed for students already proficient in American Sign Language and English. The nine courses in the program cover the theory and practice of interpreting. Students who are looking for entry-level staff positions or freelance assignments may find this program helpful. Students preparing for state quality assurance screening and national evaluation may also benefit from this program.

To obtain the certificate, students must complete all required coursework, receive a grade of B or better in ASL 4607 Interpreting Lab, and maintain an overall

average of 3.0 or better in the program.

Admission

Candidates for admission must have received a B or better in Advanced American Sign Language Proficiency 2 (ASL 4302), or have attained equivalent skills. Prospective students must complete an application process in which they demonstrate proficiency in English and American Sign Language as well as display an aptitude for tasks involved in the interpreting process. Previous experience in the Deaf community is also highly recommended.

For More Information

For the introductory program (ASL/Deaf Studies Certificate), please see page 41. Applications and further information are available from the ASL Director Marina McIntire, 276 Holmes Hall, Northeastern University, Boston, MA 02115, 617-373-3064 (voice only) or 617-373-3067 (TTY only).

				4	uaitel mouls
ASL .	4600			Introduction to Interpreting	3
ASL .	4601	ASL 4602	ASL 4603	American Sign Language-	
				English Interpreting 1, 2, 3	12
ASL .	4606			Interpreter Role and Ethics	3
ASL .	4607			Interpreting Lab	4
ASL .	4608			Practicum	4
ASL .	4609			Contrastive Analysis for Interpreters	4
ASL .	4610			Interpreters at Work	3
Reco	mmend	'ed: (not cour	ited toward ce	ertificate)	
ASL .	4604			Special Topics in Interpreting	(3)

Total Quarter Hours (Possible transfer credit: 12 quarter hours)

Advanced placement examinations are available for ASL 4202, ASL 4302, ASL 4412, and ASL 4410, which are prerequisites for courses for this certificate.

Health Information Administration Post-Baccalaureate Certificate Program



quarter hours

See page 114 for details.

Special Programs

APICS—Preparation for National Certification

The following courses are preparation for national exam certification leading to the title, Certified Production and Inventory Control Manager (CPIM).

PUR 4358 PUR 4365 PUR 4370 PUR 4390 PUR 4395	Materials Requirements Planning Production Activity Control Inventory Management Just-In-Time Manufacturing Master Production Scheduling	quarter hours 3 3 3 3 3 3
PUR 4396	Systems and Technologies	3
Total Quarter Hours (Possible trans	fer credit: 9 quarter hours) concerning the APICS certification examinat	18

CTL—Preparation for National Certification (Certified in Transportation and Logistics)

The American Society of Transportation and Logistics, Inc. has agreed to waive certain portions of their qualifying examination for the CTL through the successful completion of appropriate University College courses. Call (617) 373-2418 for further information.

Emergency Medical Technician / Basic



This course is designed for those who wish to become certified EMTs as well as for those who just want to be prepared for emergencies. Students who successfully complete the course receive nine quarter hours of credit, a Northeastern University certificate, and a CPR certification from the American Heart Association. They also become eligible to take the state EMT licensing examination.

The EMT/Basic course is offered at the Boston, Burlington, and Dedham campuses. Students spend 6 hours in class weekly for 12 weeks, attend 4 all-day Saturday exercises, and participate in 10 hours of in-hospital emergency room observation. There is a special tuition rate.

EMS 4107 _.	EMT/Basic	quarter hours 9
Total Quarter Hours		9
For more information, call 61	7-272-5500.	
For information on our Paran	nedic Technology Program, see page 124.	

NAPM—Preparation for National Certification

The following courses prepare students to take the NAPM certification exams leading to Certified Purchasing Manager (C.P.M.). These courses may be applied toward the Purchasing and Materials Management Certificate and/or the associate's degree in Purchasing.

		quarter hours
PUR 4351	Purchasing 1	3
PUR 4352	Purchasing 2	3

For more information, call 617-373-2418.

National Institute for the Food Industry Certification

HTL 4307 Food Service Sanitation prepares students to receive the National Institute for the Food Industry Certification.

Phlebotomy Certification Preparation

This program is geared toward students who want to enter the health field as well as to currently practicing phlebotomists who want to be certified. These courses are designed to prepare students for the national certification examinations in phlebotomy.

	quarter 1	luuis
MLS 4104	Introduction to Phlebotomy *†	4
	(offered Winter and Summer Quarters)	
MLS 4108++	Phlebotomy Applied Study**	2
	(offered Fall and Spring Quarters)	

Total Quarter Hours

6

*Pre-registration is recommended as this course frequently closes due to over-enrollment.
**Prerequisite MLS 4104. MLS 4108 is a 3-week full-time day practicum in an affiliated hospital.
††Do not pre-register for MLS 4108. You can register for MLS 4108 during the quarter you take MLS 4104. You must pass MLS 4104 to be eligible to take MLS 4108.
†Special fee, see page 266.

Real Estate Salesperson's Exam Preparation

The following courses cover the basic principles and terminology of real estate and the practices of real estate brokerage, including appraisal, finance, development, management, and investment. Upon successful completion of these courses, students may take the Massachusetts Real Estate Salesperson's Examination.

RE 4301 Real Estate Fundamentals 1 3 RE 4302 Real Estate Fundamentals 2 3

For more information, call 617-373-2418.

Speech and Language Pre-professional Preparation

This series of professional courses is designed to offer entry into the dynamic field of speech and audiology for a variety of potential students, including: those interested in applying for graduate work but lack the necessary prerequisites, and those who are curious to explore the field as a possible career option. The series is offered exclusively at our Dedham Campus. Days and times can be found in the *Schedule Guides*.

Fall Quarter	SLA 4101 SLA 4300	Introduction to Speech and Hearing Language Acquisition
Winter Quarter	SLA 4201 SLA 4200 SLA 4301	Anatomy & Physiology of the Vocal Mechanism Speech & Hearing Science Phonetics & Developmental Phonology
Spring Quarter	SLA 4403 SLA 4303 SLA 4460	Clinical Procedure in Speech & Language Introduction to Audiology Neurological Bases of Communication

For more information, call 617-373-2818.

Teacher Preparation Programs for Elementary and Secondary Education

You may qualify for University College's Elementary or Secondary Education Teacher Preparation Programs if you either are enrolled in a Bachelor's Degree program or have already earned a degree in the Liberal Arts and Sciences. An earned Bachelor's Degree including successful completion of this part-time undergraduate program leads to provisional (first stage) certification in Massachusetts as an Elementary school teacher or a teacher of English, History, Social Studies, Biology or General Science in grades 9 to 12. Full certification (second stage) requires a Master's Degree.*

Admission Guidelines

- Applicants must either be admitted to a specified degree program in University College and have completed three or more courses in a specified Liberal Arts and Sciences major or have completed a bachelor's degree program in an appropriate Liberal Arts and Sciences major (i.e. History) and have at least a 2.500 cumulative average.
- Before applying for this program, students should complete one introductory education course: ED 4101 Introduction to Education.
- Students must petiton the Department of Education at Northeastern University for admission to this program. Petitions, available at UC's Office of Academic and Student Affairs, 180 Ryder Hall, must be accompanied by an official transcript and a letter of recommendation from an academic advisor, and be sent to Maurice Kaufman, Chairman, Department of Education, 57 Lake Hall. Petitions must indicate the year and quarter in which you plan to register for ED 4817 Student Teaching Practicum.

The Student Teaching Practicum (ED 4817):

- Student teaching is a 5-day per week commitment for one quarter. The Student Teaching Practicum is *not* offered during the summer quarter.
- To be eligible for the Student Teaching Practicum, students must have at least a 2.50 cumulative QPA, a grade of 2.000 or higher in all professional education courses, and must meet minimum academic requirements to remain in the liberal arts major.
- Students completing their bachelor's degree should plan to register for ED 4817 during the senior year (or equivalent) of their program.
- Students must meet with Dr. Kaufman at least one quarter prior to registering for ED 4817 to document that all requirements have been met and to discuss the details of the student teaching assignment. All student teaching placements and supervision assignments are arranged by the NU Department of Education. Students are notified in writing at least six weeks prior to student teaching and will receive a handbook of policies and procedures for student teachers.

^{*}The approval process for all Teacher Preparation Programs in the Commonwealth of Massachusetts will be conducted by the State Department of Education during academic years 1994-1996.

Elementary Education Teacher Preparation Program

		quarter hours
ED 4101	Introduction to Education	3
ED 4102	Child Development and Learning	(3)
or	or	•
PSY 4240	Development: Infancy and Childho	od (3)
ED 4406	Elementary Curriculum 1:	
	language arts, art, music	3
ED 4407	Elementary Curriculum 2: social stu	idies 3
ED 4408	Elementary Curriculum 3:	
	science and mathematics	3
ED 4426	Fundamentals of Reading	3
CRS 4200	Introduction to Special Education	3
ED 4801	Field Experience 1	1
ED 4802	Field Experience 2	1
ED 4803	Field Experience 3	1
ED 4817	Student Teaching Practicum	8
Total Quarter Hours		32

Secondary Education Teacher Preparation Program

	quarter h	ours
ED 4101	Introduction to Education	3
ED 4103	Adolescent Development and Learning	(3)
or	or	` '
PSY 4241	Development: Adolescence	(3)
ED 4410	General Teaching Methods for High School	3
ED 4411	Teaching in the High School	
	(a) Mathematics	
	(b) Science	
	(c) English	
	(d) Social Sciences	3
ED 4412	Curriculum Development in the High School	3
ED 4415	Reading/Learning Problems in	
	Secondary School	3
CRS 4200	Introduction to Special Education	3
ED 4801	Field Experience 1	1
ED 4802	Field Experience 2	1
ED 4803	Field Experience 3	1
ED 4817	Student Teaching Practicum	8
Total Quarter Hours		32

Teacher Preparation in Health Education

This program is intended to meet the requirements for provisional (first stage) teacher certification (grades N-9 or 5-12) in Health Education.* Full certification (second stage) requires a master's degree. It is only open to those who possess at least a baccalaureate degree and Massachusetts teacher certification in another field. Prospective students should be aware that a full-time practicum is required for Massachusetts Teacher Certification. This practicum will take place during the regular school year. No Summer practica are possible.

			quarter	hours
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3	9
HSC 4310	HSC 4311		Public Health 1, 2	6
HSC 4380			Mental Health and Counseling	3
HSC 4475			Methods of School Health Education	3
HSC 4600			Advanced Nutrition	1 3
HSC 4706			Health Education Practicum	8
PSY 4240			Development: Infancy & Childhood (N-9)	(3)
or			or	` ´
PSY 4241			Development: Adolescence (5-12)	(3)
PSY 4280			Human Sexuality and Love	3
PSY 4352			Drugs and Behavior	3
REC 4105			First Aid Procedures	2

*The approval process for all Teacher Preparation Programs in the Commonwealth of Massachusetts will be conducted by the State Department of Education during the academic year 1994-1995.

43

Total Quarter Hours:

Business Administration Degree Programs

Martha P. Welch, Ed.D. Assistant Dean, Director, **Business Administration Programs**

270 Ryder Hall 617-373-2418

Agnes Jordan Assistant to the Director, Business Administration Programs

Program Consultants

ACC: Accounting

Consultant:

Professor Paul A. Janell (College of Business Administration) (617-373-4645) Associate Consultant (Accounting Principles): Walter E. Kearney, Jr. (Dean, College of Business Administration) (617-373-2330)

BL: Business Law

Consultant:

Thomas J. Ahern, Esq. (617-426-4211)

FI: Finance

Consultant:

Jonathan Welch (Dean, College of Business Administration) (617-373-5961) Associate Consultant:

Joseph Stanford (617-383-9299)

Associate Consultant:

Robert T. Trimper (508-443-6518)

HRM: Human Resources Management

Consultant:

Professor Brendan Bannister (College of Business Administration) (617-373-2503) Associate Consultant:

Kenneth C. Solano (617-373-5664)

HTL: Hotel and Restaurant Management

Consultant:

Donald A. Witkoski (508-362-2131, x361)

MGT: Management

Consultant:

Professor Daniel McCarthy (College of Business Administration) (617-373-3255)

Associate Consultants:

W. Arthur Gagne (508-263-5819) Robert L. Goldberg (617-373-4737)

MIS: Management Information Systems

Consultant:

Professor Victor Godin (College of Business Administration) (617-373-2418) Associate Consultant (Introduction): Thomas M. Kelly (508-468-7900)

MIS: cont'd

Associate Consultant (Programming): Edward Kaplan

(617-965-0277)

Associate Consultant (Systems):

Edward Sousa (617-373-2335)

Associate Consultant (Computer Systems Specialist Programs):

Alan M. Tattle (617-595-3696)

MKT: Marketing

Consultant:

Professor Dan T. Dunn, Jr. (College of Business Administration) (617-373-4563) Associate Consultant: Ronald J. McBrien (617-373-4745)

MS: Quality Control and Management Sciences

Consultant:

Professor Robert A. Parsons (College of Business Administration) (617-373-4749) Associate Consultant:

William E. Grady (617-721-5770)

OM: Operations Management

Consultant:

Professor Robert A. Parsons (College of Business Administration) (617-373-4749)

Associate Consultant:

William E. Grady (617-721-5770)

PUR: Purchasing and Materials

Management Consultant:

Stephen F. Armstrong (508-281-2000, x2519)

RE: Real Estate

Consultant:

Peter Flynn (617-233-2284)

TRN: Transportation and Physical **Distribution Management**

Professor James F. Molloy (College of Business Administration)

(617-373-4812)

67

A Wide Variety of Quality Programs: Preparing Students for the Challenge of Business

For generations, students in Northeastern University's part-time business programs have been successfully prepared to meet the challenges faced in the business professions. As the demands of the corporate world have changed, and the need for new skills has become evident, Northeastern has consistently demonstrated its ability to match the content of its academic offerings with the needs of men and women in business.

Today—perhaps more than ever—the professional competence ensured through the study of Northeastern's business programs is necessary for getting and keeping a position in the business world. Additionally, our business pro-

grams lay the foundation for long-range advancement.

What is found to be of greatest importance to contemporary career success is the quality of the chosen program of study. Northeastern's part-time bachelor's degree program in Business Administration is fully accredited by the American Assembly of Collegiate Schools of Business, the most prestigious accrediting organization of university business degrees in the United States. Our degree programs have been carefully structured to meet all the standards established by the AACSB.

University College's Bachelor of Science in Business Administration degree programs are described on page 70. Our new Joint BSBA/MBA program is detailed on page 74.

Certificates in Business

Individuals can pursue a certificate program to build on or prepare for a new career, to qualify for a promotion, to stay current in a chosen field, or simply to acquire new skills and knowledge. Some individuals enroll in a certificate program as part of their traditional degree program. University College offers certificates in the following business program areas:

Business Administration

Accounting	(page 40)
Advanced Accounting	(page 58)
Business Administration	(page 42)
Compensation and Benefits Management	(page 43)
Computer Certificates	40 /
Computer Programming and Software Development	(page 44)
Computer Programming and Systems Analysis	(page 45)
Computer Systems Specialist Program	(page 46)
Microcomputer Software	(page 53)
Corporate Travel Management	(page 53)
• Finance	(page 48)
Food Service Management	(page 49)
Hotel and Restaurant Management	(page 50)
Human Resources Management	
International Business and Culture	(page 51)
	(page 51)
Management Mortaging	(page 52)
• Marketing	(page 53)
Operations Management	(page 53)
Personal Financial Planning	(page 54)
Purchasing and Materials Management	(page 55)
Small Business Management and Entrepreneurship	(page 55)
Transportation and Physical Distribution Management	(page 56)
• UNIX for Business	(page 57)

National Certification—CTL (Certified in Transportation and Logistics)
Students may waive portions of examinations through the study of appropriate University College courses. See page 61.

National Institute for the Food Industry Certification

HTL 4307 Food Service Sanitation provides an opportunity for certification from the National Institute for the Food Industry.

Preparation for National Certification—APICS and NAPM

Clusters of courses are being offered to prepare students for the national examinations leading to the titles of Certified Production and Inventory Control Manager (CPIM) and Certified Purchasing Manager (C.P.M.). See pages 61-62 for details.

Real Estate Salesperson's Exam Preparation

Individuals interested in preparing for the Massachusetts Real Estate Salesperson's Examination may take the courses detailed on page 63.

Degree Programs

Associate in Science Degrees (AS)

Through a core of professional business courses and a well-balanced sequence of liberal arts courses, students in the Associate in Science degree programs

acquire specialized knowledge for future managerial growth.

To receive the associate's degree, a student must successfully complete the 87 quarter hours of course credit specified for the degree. Students who have completed a certificate program may then enroll in an associate's degree program. (Although credits earned in a certificate program may be applied toward this degree, completion of a certificate program is not required.)

Students who wish to earn one of the Associate in Science degrees in business and who have not earned 80 quarter hours of credit are required to enroll in the

Open Business courses listed on pages 72-73.

The final examinations of certain open Business courses (see asterisked courses on pages 72-73) are used for course validation in the Bachelor of Science in Business Administration (BSBA) Degree programs. The students in these classes must earn a "C" or above in the final validating examination for the course to be accepted in the BSBA program. Please consult course instructor or call 617-373-2418 for further details.

Associate's degrees are offered in the following areas:

Business Administration

Accounting (page 75)

• Business Administration (page 76)

• Finance (page 77)

 Hotel and Restaurant Management (page 78)

Human Resources Management (page 79)

 Management Information Systems (page 80) • Marketing (page 81)

 Purchasing and Materials Management (page 82)

 Transportation and Physical Distribution Management (page 83)

Accreditation by the American Assembly of Collegiate Schools of Business

University College's Bachelor of Science in Business Administration Degree is fully accredited by the American Assembly of Collegiate Schools of Business, indicating that the programs meet the accrediting agency's standards for faculty and student quality, curriculum design and overall University support.

Bachelor of Science in Business Administration: BSBA Degree

University College offers a Bachelor of Science in Business Administration degree with concentrations in these areas:

- Accounting
- Finance
- Management

- Management Information Systems
- Marketing

The Bachelor of Science in Business Administration degree programs of University College are designed for men and women seeking to prepare themselves for managerial responsibility in business, government, and other organizations with the goal of developing the ability to recognize and solve problems and to understand the role of the business firm in the community, the nation, and the world. In developing these skills, students have the opportunity to gain not only a broad understanding of business and organizational problems through specialized courses, but also first-hand knowledge from effective full-time College of Business Administration professors as well as working professionals who are also teachers.

To ensure a well-rounded background that is so valuable in the business world, the college combines its business curriculum with courses from the sci-

ences, humanities, and social sciences.

After the coursework foundation is completed, (See "Planning Your Program of Study Toward a Bachelor of Science in Business Administration Degree," below) the various functional areas of business are emphasized, and students concentrate their studies in specific areas. (Detailed descriptions of these areas follow this section.) In most of these upper-level courses, the traditional lecture-and-recitation format is supplemented by problem-solving and case-study methods where students analyze actual businesses and business problems and present recommendations for possible solutions.

Planning Your Program of Study Toward a Bachelor of Science in Business Administration Degree

Students who plan to work toward the Bachelor of Science in Business Administration Degree should submit transcripts of previously completed college-level coursework and a Transfer Credit Petition to the Office of Academic and Student Affairs. (Transfer Credit Petitions may be requested by calling 617-373-2400 or TTY 617-373-2825. Petitions are also available at all campus locations.) Students will receive by mail a transfer credit evaluation and a suggested plan of study to prepare for admission to this program. When this paperwork has been completed, students are encouraged to schedule an appointment to discuss their programs with an academic advisor.

Admissions Application Procedure

Students who do not have any academic courses that may be transferred from another educational institution or program should meet with an academic advisor early in their studies at University College. All students are required to complete 80 quarter hours of credit, including English courses ENG 4100, ENG 4111, and ENG 4112; mathematics courses MTH 4110 and MTH 4111; and a social science elective from the course list that follows. This coursework must be completed prior to application for admission to the BSBA degree program (may include transfer credit).

Once students have met these requirements, they should complete an Admissions Application to the Bachelor of Science in Business Administration Degree program and return it to the Office of Academic and Student Affairs to initiate the admissions process. This application may be obtained at all campus locations or by calling 617-373-2400 or TTY 617-373-2825.

Admission to the BSBA Degree program is restricted to students who have maintained a 2.0 cumulative grade-point average at University College and completed a minimum of 80 quarter hours of credit.

Students should choose their 80 quarter hours of credit from the recommended lower-level course list that follows:

ACC 4101 BL 4101	ACC 4102 BL 4102	ACC 4103	Accounting Principles 1, 2, 3 Law 1, 2
CMN 4101			Fundamentals of Human Communication
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3
ECN 4250	ECN 4251		Statistics 1, 2
ENG 4100			Critical Writing 1
ENG 4111	ENG 4112		Critical Writing 2, 3
	ENG 4381		Writing for the Professions 1, 2 The Civilization of the Ancient
HST 4101			The Civilization of the Ancient
			and Medieval Worlds

One History course from the following: (HST 4102, 4103, 4201, 4202, 4203, 4600 through 4646)

MGT 4101 MGT 4102	Introduction to Business and
	Management 1, 2
MIS 4101 MIS 4102	Introduction to Data Processing
	and Information Systems 1, 2
MTH 4110 MTH 4111	Contemporary Algebra 1, 2
PHL 4100	Philosophical Thinking
PSY 4110	Introduction to Psychology:
	Fundamental Issues
One Psychology elective (PSY)	
SOC 4100	Roles, Culture, and the Individual
SOC 4101	Inequality and Institutions
0#	Or -

SOC 4102 Institutions and Social Change 3 quarter hours of a natural science elective (BIO, CHM or ESC) CD 4100 Managing Career Decisions—strongly suggested elective

Special Requirements for BSBA Degree Programs

The following procedures assure that University College's BSBA programs conform to AACSB standards:

1. Reserved and Open Courses

Business courses in the BSBA programs are classified as either reserved or open. Reserved courses are upper-level and are restricted to students who have enrolled in the BSBA degree program. To be qualified to register for a reserved course, the student must have earned a total of 80 or more credits (including transfer credits). Reserved courses are offered at the Boston, Burlington, Dedham, Framingham, Weymouth, and Downtown campuses. A student may register for an open course anytime, providing he or she has fulfilled the prerequisites. The final examinations of certain open Business courses (see asterisked courses on pages 72-73) are used for course validation in the Bachelor of Science in Business Administration (BSBA) Degree programs. The students in these classes must earn a "C" or above in the final validating examination for the course to be accepted in the BSBA program. Please consult course instructor or call 617-373-2418 for further details.

2. Validation

Validation is the term used to describe procedures that test whether an open course completed at the lower division of a bachelor's program should be accepted for transfer credit into the upper division of an AACSB-approved bachelor's

degree program. There are three approved validation methods:

• Sequential Course. Students who enroll in a Bachelor of Science in Business Administration Degree program can validate a course taken at University College or elsewhere by successfully completing a course that is sequential to the course already completed. The sequential course must be taken in a reserved section. For example, successful completion of Sales Management 2 in a reserved course can validate Sales Management 1, regardless of where the student completed Sales Management 1.

• College-Level Examination Program (CLEP) and/or Proficiency Examination Program (PEP). These standard examinations can be used to validate some

previously taken upper-level business courses.

• Departmental Examination. In cases where a sequential course does not exist or is not desired by a student, and no appropriate CLEP or PEP examination exists, validation can be accomplished through a departmental examination.

Required upper-level courses are listed as follows under Reserved and Open

Sections.

OPEN BUSINESS COURSES

Open business courses are available on an open enrollment basis as long as the stated prerequisites are met.

ACC 4301 ACC 4310 FI 4301* FI 4302* FI 4310 FI 4320	ACC 4302	ACC 4307	Intermediate Accounting 1, 2, 3 Cost Accounting 1 Principles of Finance Financial Management Investment Principles Credit Principles
FI 4320			Credit Principles

*The final examinations of these open business courses are used for course validation in the Bachelor of Science in Business Administration (BSBA) degree programs. The students in these classes must earn a "C" or above in the final validating examination for the course to be accepted in the BSBA program.

FI 4325		Budgeting and Planning
HRM 4301*		Organizational Behavior 1
HRM 4302*		Organizational Behavior 2
HRM 4310*		Human Resources Management
HRM 4304*		Organizational Behavior 1 and
		Organizational Behavior 2 (Intensive)
MIS 4301	MIS 4302	Structured Systems Analysis and Design 1, 2
MIS 4305		Structured Systems Analysis and Design (Intensive)
MIS 4307		Communications and Networking
MKT 4301*	MKT 4302*	Introduction to Marketing 1, 2
MKT 4310		Advertising Management 1
MKT 4315		Sales Management 1
MKT 4320*		Marketing Management

*The final examinations of these open business courses are used for course validation in the Bachelor of Science in Business Administration (BSBA) degree programs. The students in these classes must earn a "C" or above in the final validating examination for the course to be accepted in the BSBA program.

RESERVED BUSINESS COURSES

The courses below are offered for students in the Bachelor of Science degree programs and for those students who have earned 80 quarter hours of college credit. Please note appropriate course prerequisites.

ACC 4400 ACC 4408		Accounting Information Systems Intermediate Accounting 4
ACC 4411		Cost Accounting 2
ACC 4425	ACC 4426	Auditing 1, 2
ACC 4440	ACC 4441	Federal Income Taxes 1, 2
FI 4403		Financial Strategy
FI 4411		Investment Management
FI 4421		Credit Management
FI 4426		Financial Control
FI 4450		International Finance
HRM 4415		Leadership
MGT 4410		Project Management Process: Planning and Implementation
MGT 4446		International Business
		Management and Operations
MGT 4450**	MGT 4451**	Business Policy 1, 2
MGT 4452**		Business Policy (Intensive)
MGT 4455		Manager and Society
MIS 4445		Database Management Systems
MIS 4446		Information Systems for Management
MIS 4485		Applied MIS Development Project
MKT 4411		Advertising Management 2
MKT 4430	MKT 4431	Marketing Research 1, 2
MKT 4453		International Marketing
MKT 4457		Competitive Strategy
OM 4404		Service Operations Management

^{**}Must have 130 q.h. to register.

Special Studies

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, and Honors Programs for Business. Consult course descriptions on pages 155-263.

Graduate Program

A Special Joint Degree BSBA/MBA Program

University College, in conjunction with the College of Business Administration, has structured a new joint degree program for Bachelor of Science in business Administration degree students. Here's how it works: pre-qualified students can take up to four MBA-required courses (12 q.h.) in their BSBA program. After completing the 174 credits required for the BSBA (including the 12 MBA credits), BSBA/MBA students will receive their BSBA degree. The MBA courses completed in the BSBA programs will be transferred into the MBA program.

The MBA required courses are as follows:

MBA Requirements for BSBA/MBA	University College Courses Replaced by MBA Requirements
HRM 3815 Organizational Behavior (6 q.h.)	6 q.h. U.C. Electives*
MSC 3805 Operations Management 1	OM 4404 Service Operations Management*
Any International Elective at the MBA Level	MGT 4446 Introduction to International Business

^{*}Do not take these courses if you plan to enter the BSBA/MBA.

In addition, students who have recently completed undergraduate business courses with grades of B or better may be able to qualify for waivers of some of the required courses in the BSBA/MBA. The determination of these waivers is done on an individual basis. Early planning can help a prospective BSBA/MBA student to maximize the possibility of waivers.

and Operations*

How to Qualify:

To be pre-qualified for the highly competitive BSBA/MBA program, the student must demonstrate honors-level work in University College (at least a GPA of 3.25), a minimum of three years of relevant work experience, a recommendation from one or more members of the College of Business Administration faculty, submission of promising GMAT score, and an interview by a representative of the Graduate School of Business Administration.

Candidates have two resources: University College advisors (617-373-2400) to assure progress in the BSBA curriculum and the Part-time MBA Program Manager (Mary Wirtz, 617-373-2714) in the Graduate School of Business Administration for preliminary assessment of MBA candidacy and advice on preparation. Both resources will help candidates synchronize their studies and maximize their academic opportunities.

Accounting Associate in Science Degree (Major Code 470)

See also: Accounting Bachelor of Science in Business Administration Degree, page 85.

•			
			quarter hours
		Critical Writing 1	4
ENG 4112			6
MTH 4111			
ECN 4116	ECN 4117		_
2011 1110			9
			-
			y. 3
		rundamental issues	3
ninistration			
BL 4102		Law 1. 2	6
		•	3
HRM 4302			
			1,2
WG1 4102			6
N. FTC 4100			_
MIS 4102			
		and Information System	s 1, 2 6
ntration Cou	ırses		
		Accounting Principles 1 2	,3 9
			•
ACC 4502	ACC 4507		1, 2, 3
		Cost Accounting 1	3
Electives			11
Hours			87
	BL 4102 HRM 4302 MGT 4102 MIS 4102 ntration Cou	ENG 4112 MTH 4111 ECN 4116 ECN 4117 ministration BL 4102 HRM 4302 MGT 4102 MIS 4102 mtration Courses ACC 4102 ACC 4103 ACC 4302 ACC 4307 Electives	Critical Writing 1 Critical Writing 2, 3 Contemporary Algebra 1, ECN 4116 ECN 4117 Economic Principles and Problems 1,2,3 Introduction to Psycholog Fundamental Issues Law 1, 2 Principles of Finance Organizational Behavior Introduction to Business and Management 1, 2 Introduction to Data Proc and Information System Intration Courses ACC 4102 ACC 4103 ACC 4302 ACC 4307 Accounting Principles 1, 2 Intermediate Accounting Cost Accounting 1

Business Administration Associate in Science Degree (Major Code 401)



See also: Management Bachelor of Science in Business Administration Degree, page 89.

Core Course	es			
Liberal Arts	3		quarter l	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
Business Ad	dministratio	n		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Business Law 1, 2	
FI 4301			Principles of Finance	6 3 3
FI 4302			Financial Management	3
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
HRM 4310			Human Resources Management	3
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MKT 4301			Introduction to Marketing 1	3
MGT 4101	MGT 4102	MGT 4103	Introduction to Business	
			and Management 1, 2, 3	9
Nonbusiness	Electives			11
TOTAL MODITION	2111111100			
Total Ouart	er Hours			87

Finance Associate in Science Degree (Major Code 476)

See also: Finance Bachelor of Science in Business Administration Degree, page 87.

Core Cours	es			
Liberal Art	:S		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
Rusiness A	dministration	n		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102	1100 1100	Law 1, 2	6
HRM 4301	HRM 4302		Organizational Behavior 1, 2	-6
MGT 4101	MGT 4102		Introduction to Business	U
11101 4101	MOI 4102		and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing	Ü
1110	1110 1102		and Information Systems 1, 2	6
Choose one of	computer progr	amming course	e from:	
MIS 4221		Ü	COBOL Programming 1	(3)
or			or	
MIS 4241			Programming in BASIC 1	(3)
or			or	
MIS 4276			C Programming 1	(3)
07			or	(2)
MIS 4236			Advanced PC Software	(3)
Major Con	centration Co	urses		
FI 4301			Principles of Finance	3
FI 4302			Financial Management	3
FI 4310			Investment Principles	3
FI 4320			Credit Principles	3
FI 4325			Budgeting and Planning	3
Nonbusine	ss Electives			8
Total Ouar	ter Hours			87

Hotel and Restaurant Management Associate in Science Degree (Major Code 472)



Core Course	S		
Liberal Arts		quarter he	ours
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
MTH 4110	MTH 4111	Contemporary Algebra 1, 2	6
ECN 4115		Economic Principles and Problems 1	3
PSY 4110		Introduction to Psychology:	
		Fundamental Issues	3
One Psycholog	gy elective (PSY)		3
Business Ad	ministration		
ACC 4101		Accounting Principles 1	3
HRM 4301	HRM 4302	Organizational Behavior 1, 2	6
HRM 4310		Human Resources Management	3
MIS 4101		Introduction to Data Processing	
		and Information Systems 1	3
Major Conce	entration Courses		
HTL 4301		Introduction to Hotel and	
		Restaurant Management	3
HTL 4303		Front Office Management	3
HTL 4304		Hotel and Restaurant Law	3 3 3
HTL 4307		Food Service Sanitation	
HTL 4308		Food and Beverage Cost Control	3
HTL 4309		Managerial Accounting for the	
		Hospitality Industry	3
HTL 4313		Introduction to Tourism	3
HTL 4320		Food Preparation (Intensive)	6
HTL 4322		Consumer Food Preparation	3
HTL 4324		Dining Room Beverage	
		Operation and Preparation	3
HTL 4331		Professional Chef's Training	6
Electives			8
Total Ouarto	* Hours		87

Human Resources Management Associate in Science Degree (Major Code 477)



Core Cours				
Liberal Art	:S		quarter	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
Business A	dministration			
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
BL 4101			Law 1	3
MGT 4101	MGT 4102		Introduction to Business	
			and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MKT 4301			Introduction to Marketing 1	3
Choose one c	omputer course	from:		
MIS 4221	· ·	•	COBOL Programming 1	(3)
or			or	` `
MIS 4241			Programming in BASIC 1	(3)
or			or	
MIS 4276			C Programming 1	(3)
or			or	
MIS 4236			Advanced PC Software	(3)
Major Cone	entration Cou	rses		
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
HRM 4309			Labor Relations	3
HRM 4310			Human Resources Management	3 3 3 3
HRM 4321			Wage and Salary Administration	3
HRM 4322			Employee Benefits	3
HRM 4325			Training and Development	3
HRM 4333			Employment Rights	3
Nonbusine	ss Electives			8
Total Ouard	or Hours		•	97

Management Information Systems Associate in Science Degree (Major Code 475)

See also: Management Information Systems Bachelor of Science in Business Administration, page 91.

Core Cours	es			
Liberal Arts	S		quarter l	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
Rusiness A	dministration			
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
FI 4301			Principles of Finance	3
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
MGT 4101			Introduction to Business	
			and Management 1	3
OM 4404*			Service Operations Management	3
	entration Cou	ırses		
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	. 6
MIS 4221	MIS 4222		COBOL Programming 1, 2	(6)
or) // (/ A F		or	
MIS 4276	MIS 4277		C Programming 1, 2	, (6)
MIS 4236			Advanced PC Software	3
MIS 4273			PC DOS	(3)
or MIS 4282			or Operating Systems Overview	(3)
MIS 4301	MIS 4302		Structured Systems Analysis	(3)
WIID 4501	1410 4002		and Design 1, 2	6
MIS 4307			Communications and Networking	3
			Committee do la committee de l	
Electives**				8
Total Quart	ter Hours			87

*See page 235 for prerequisites. Take as one of last courses in A.S. program after acquiring 80 q.h.

**Telecommunications, Communications and Unix Programming

Certificate Electives

Your choice of one of the following Division of Continuing Education non-credit certificates will be accepted into the Management Information Systems AS and BSBA and the Operations Management AS and Operations Technology BS:

Communications Systems Data Communications Systems Telecommunications Systems Unix Programming non-credit

Each certificate is equivalent to 18 q.h. of credit and is considered non-business.

Marketing Associate in Science Degree (Major Code 479)

See also: Marketing Bachelor of Science in Business Administration Degree, page 93.

Core Cours	es			
Liberal Art	s		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4115	ECN 4116 I	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
ENG 4380			Writing for the Professions 1	3
Business A	dministration			
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
FI 4301			Principles of Finance	3
FI 4302			Financial Management	3
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
			and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
Major Cond	centration Cour	rses		
MKT 4301	MKT 4302		Introduction to Marketing 1, 2	6
MKT 4308			Direct Response Marketing	6 3 3 3
MKT 4310			Advertising Management 1	3
MKT 4315			Sales Management 1	3
MKT 4320			Marketing Management	3
Nonbusine	ss Electives			11
Total Quart	ter Hours			87

Purchasing and Materials Management Associate in Science Degree (Major Code 431)



Core Course	es			
Liberal Arts	3		quarter	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
Destinate A	J ! ! . ! ! !			
	dministration	ı	h .: D: : 1 4 0	
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
	3 550 1100		and Management 1, 2	6
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MKT 4301			Introduction to Marketing 1	3
MS 4325			Business Decision Models	3
OM 4301 (for	merly IM 4301))	Introduction to Operations	
			Management	(3)
or			or	
OM 4404*			Service Quality Management	(3)
Major Conc	entration Co	urses		
PUR 4351	PUR 4352		Purchasing 1, 2	6
PUR 4357	1011101		Business Negotiations	3
PUR 4358			Materials Requirements Planning	3
PUR 4365			Production Activity Control	6 3 3 3 3
PUR 4370			Inventory Management	3
PUR 4390			Just-in-Time Manufacturing (JIT)	(3)
or			or	(-)
PUR 4395			Master Production Scheduling	(3)
or			or	(-)
PUR 4396			Systems and Technologies	(3)
Nonbusines	s Electives			8
Total Quart	er Hours			87

Transportation and Physical Distribution Management Associate in Science Degree (Major Code 483)



Core Course	es			
Liberal Arts	3		quarter	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4250	ECN 4251		Statistics 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and Problems 1, 2, 3	9
Business Ad	dministration	ı		
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
			and Management 1, 2	6
MKT 4301			Introduction to Marketing 1	3
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MS 4325			Business Decision Models	3
OM 4301 (for	merly IM 4301)	Introduction to Operations	
			Management	(3)
or			or	
OM 4404*			Service Quality Management	(3)
	entration Co	urses		
TRN 4301	TRN 4303		Elements of Transportation 1, 2	6
TRN 4302	TRN 4304		Physical Distribution	
			Management 1, 2	6
Transportatio	n electives			9
Nonbusines	s Electives			8
Total Quarte	er Hours			87

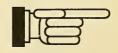
ATTENTION: Transportation and Physical Distribution Management Students

Students may use their 9 transportation elective credits for developing a career track in one of the following areas:

Carrier Management (Choose 3)

Carrier Maria Circuit (Crisobe b)	
TRN 4316	Carrier Management
TRN 4334	Private Trucking
TRN 4340	Air Transportation
TRN 4341	Commuter Transportation
TRN 4350	International Transportation and
	Distribution Management

^{*}See page 235 for prerequisites. Take as one of last courses in A.S. program after acquiring 80 q.h.



Corporate Travel Management (Choose 3)	
TRN 4308	Corporate Travel Management 1
TRN 4309	Corporate Travel Management 2
TRN 4701	Independent Study in Travel Management
TRN 4900	Field Work in Travel Management
Logistics (Choose 3)	
TRN 4305	Traffic Management 1: Rates and Tarriffs
TRN 4321	Transportation Negotiations
TRN 4325	Management of Warehouse Operations
TRN 4342	Transportation Loss, Damage and Other
	Claims
TRN 4350	International Transportation and
	Distribution Management
T T (C)	
Transportation Policy (Choose 3)	
TRN 4321	Transportation Negotiations
TRN 4350	International Transportation and
	Distribution Management
TRN 4341	Commuter Transportation
TRN 4701	Independent Study (Transportation Policy)

Bachelor of Science in Business Administration Degrees

Accounting Bachelor of Science in Business Administration Degree (Major Code 460)



See also: Accounting Associate in Science Degree, page 75.

Liberal Arts				quarter hours	
ENG 4100			Critical Writing 1	4	
ENG 4111	ENG 4112		Critical Writing 2, 3	6	
MTH 4110	MTH 4111		Contemporary Algebra 1,	, 2 6	
ENG 4380	ENG 4381		Writing for the Profession		
ECN 4115	ECN 4116	ECN 4117	Economic Principles and		
			Problems 1, 2, 3	9	
ECN 4250	ECN 4251		Statistics 1, 2	6	
HST 4101			The Civilization of the Ar	ncient	
			and Medieval Worlds	3	
One History	ourse from the	following:			
		, 4203, 4600 throu	gh 4646)	3	
PHL 4100			Philosophical Thinking	_ 3	
PSY 4110			Introduction to Psycholog	gy:	
			Fundamental Issues	3	
One Psycholo	gy elective (PS	Y)		3	
SOC 4100			Roles, Culture, and the In	dividual 3	
SOC 4101			Inequality and Institution	.s	
or			or		
SOC 4102			Institutions and Social Ch	ange 3	
CMN 4101			Fundamentals of Human		
			Communication	3	
Rusiness Ad	lministration				
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2	2,3 9	
BL 4101	BL 4102	1100 1100	Law 1, 2	6	
FI 4301	DE 1102		Principles of Finance	3	
FI 4302			Financial Management	3	
HRM 4301	HRM 4302		Organizational Behavior		
MGT 4101	MGT 4102		Introduction to Business	,-	
MOI HOI	MG1 1102		and Management 1, 2	6	
MGT 4446			International Business		
			Management and Opera	ations 3	
MIS 4101	MIS 4102		Introduction to Data Proc		
			and Information System	s 1, 2 6	
MKT 4301			Introduction to Marketing		
OM 4404			Service Operations Manag		
MGT 4450*	MGT 4451		Business Policy 1, 2	6	

^{*}Students must complete 130 q.h. and all other Business Administration core courses before enrolling in Business Policy 1.



Choose one computer programm	ing course from:	
MIS 4221	COBOL Programming 1	(3
or	or	
MIS 4241	Programming BASIC 1	(3
or	or	
MIS 4276	C Programming 1	(3)
or	or	
MIS 4236	Advanced PC Software	(3)
Major Concentration Courses		
ACC 4301 ACC 4302 ACC	C 4307 Intermediate Accounting 1, 2, 3	9
ACC 4408	Intermediate Accounting 4	3
ACC 4310	Cost Accounting 1	3 3 3
ACC 4411	Cost Accounting 2	3
ACC 4425 ACC 4426	Auditing 1, 2	6
ACC 4440 ACC 4441	Federal Income Taxes 1, 2	6
ACC 4400	Accounting Information Systems	3
Electives		
Natural science elective (BIO, CH	HM or ESC)	3
Open electives	1141, 01 1250)	17
Business elective		3
pusitiess elective	. 1	3
Total Quarter Hours	,	174

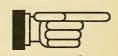
Finance Bachelor of Science in Business Administration Degree (Major Code 433)



See also: Finance Associate in Science Degree, page 77.

Liberal Arts	s		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1,2,3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
PSY 4110			Introduction to Psychology:	Ü
			Fundamental Issues	3
One Psychological	ogy elective (P	SY)	i undumental 135 des	3
ENG 4380	ENG 4381	01)	Writing for the Professions 1, 2	6
SOC 4100	2110 1001		Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	(3)
SOC 4102			Institutions and Social Change	(2)
CMN 4101			Fundamentals of Human	(3)
CIVITY TIOI			Communication	3
HST 4101			The Civilization of the Ancient	3
1151 4101			and Medieval Worlds	3
One History	course from th	o following.	and Medieval Worlds	3
				_
PHL 4100	103, 4201, 4202	2,4203, 4600 thro		3 3
F11L 4100			Philosophical Thinking	3
Danimana A	J ! !			
	dministration		A D: 11 100	0
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
3.50m.444			and Management 1, 2	6
MGT 4446			International Business	
			Management and Operations	3
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MKT 4301			Introduction to Marketing 1	3
OM 4404			Service Operations Management	3
MGT 4450*	MGT 4451		Business Policy 1, 2	6
Choose one con	nputer course fr	om:		
MIS 4221			COBOL Programming 1	(3)
or			or	
MIS 4241			Programming in BASIC 1	(3)
			•	
or			or	
MIS 4276			C Programming 1	(3)
or .			or	
MIS 4236			Advanced PC Software	(3)

^{*}Students must complete 130 q.h. and all other Business Administration core courses before enrolling in Business Policy 1.



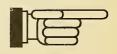
Major Concentration Courses		
FI 4301	Principles of Finance	3
FI 4302	Financial Management	3
FI 4403	Financial Strategy	3
FI 4310	Investment Principles	3
FI 4411	Investment Management	3
FI 4320	Credit Principles	3
FI 4421	Credit Management	3
FI 4325	Budgeting and Planning	3
FI 4426	Financial Control	3
FI 4450	International Finance	3
Electives		
Natural science elective (BIO, CHM, or ESC)		3
Open electives		3 2 <i>6</i>
Business elective		3
Total Quarter Hours		174

Management Bachelor of Science in Business Administration Degree (Major Code 463)



See also: Business Administration Associate in Science Degree, page 76.

Liberal Arts				quarter hours	,
ENG 4100			Critical Writing 1	4	
ENG 4111	ENG 4112		Critical Writing 2, 3	6	
MTH 4110	MTH 4111		Contemporary Algebra 1		
ENG 4380	ENG 4381		Writing for the Profession		
ECN 4115	ECN 4116	ECN 4117	Economic Principles and		
			Problems 1, 2, 3	9)
ECN 4250	ECN 4251		Statistics 1, 2	6	
HST 4101			The Civilization of the A	ncient	
			and Medieval Worlds	3	}
One History	ourse from th	e following:			
		2, 4203, 4600 throu	gh 4646)	3	3
PHL 4100			Philosophical Thinking	3	
PSY 4110			Introduction to Psycholo	gv:	
			Fundamental Issues		3
One Psycholo	gy elective (P	SY)		3	3
SOC 4100	6,	/	Roles, Culture, and the In	3 3 3 adividual	3
SOC 4101			Inequality and Institution		
or			or	(3	,
SOC 4102			Institutions and Social Cl	hange (3	3)
CMN 4101			Fundamentals of Human		′
			Communication	3	3
Business Ad	lministration	n			
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1,	2, 3)
BL 4101	BL 4102		Law 1, 2	ϵ	5
FI 4301			Principles of Finance	3 3	3
FI 4302			Financial Management	3	3
HRM 4301	HRM 4302		Organizational Behavior	1, 2	5
HRM 4310			Human Resources Manag	gement 3	3
MGT 4101	MGT 4102	MGT 4103	Introduction to Business		
			and Management 1, 2, 3	3 9)
MIS 4101	MIS 4102		Introduction to Data Pro-		
			and Information System	ns 1, 2 6	
MIS 4236			Advanced PC Software	3	3
MKT 4301			Introduction to Marketin	g 1 3	3
OM 4404			Service Operations Mana		3



Major Concentration Courses	
HRM 4415	Leadership 3
MGT 4410	Project Management Process: Planning
	and Implementation 3
MGT 4446	International Business
	Management and Operations 3
MGT 4455	Manager and Society 3
MKT 4320	Marketing Management 1 3
MIS 4446	Information Systems for Management 3
MGT 4450* MGT 4451	Business Policy 1, 2
Electives	
Natural science elective (BIO, CHM, or ESC)	3
Open electives	26
Business electives	6
Total Quarter Hours	174
*Students must complete 130 q.h. and all other Busi	
ordatello mast complete 100 q.n. and an other busi	ress remains dution core courses before enforming

in Business Policy 1.

Accelerated Business Management Program

Look for ACCEL, the Accelerated Business Management Program, in the *University College Schedule Guides*.

Management Information Systems Bachelor of Science in Business Administration Degree (Major Code 465)



See also: Management Information Systems Associate in Science Degree, page 80.

Liberal Arts	3		quarter l	nours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ENG 4380	ENG 4381		Writing for the Professions 1, 2	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
ECN4250	ECN4251		Statistics 1, 2	6
HST 4101			The Civilization of the Ancient	
			and Medieval Worlds	3
One History	course from the	e following:		
	103, 4201, 4202	, 4203, 4600 throu		3
PHL 4100			Philosophical Thinking	3
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
	gy elective (PS	SY)		3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
CMN 4101			Fundamentals of Human	
			Communication	3
Business Ac	Iministration	1		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
FI 4301			Principles of Finance	3
FI 4302			Financial Management	3
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
			and Management 1, 2	6
MGT 4446			International Business	
			Management and Operations	3
MIS 4101	MIS 4102		Introduction to Data Processing	
			and Information Systems 1, 2	6
MIS 4221	MIS 4222		COBOL Programming 1, 2	(6)
07			or	
MIS 4276	MIS 4277		C Programming 1, 2	(6)
MIS 4236			Advanced PC Software	3
MIS 4282			Operating Systems Overview	(3)
07			or no noc	(0)
MIS 4273			PC DOS	(3)
MKT 4301			Introduction to Marketing 1	3
OM 4404	MOT 4454		Service Operations Management	3
MGT 4450*	MGT 4451		Business Policy 1, 2	6

^{*}Students must complete 130 q.h. and all other Business Administration core courses before enrolling in Business Policy 1.



Major Concentration Courses	
MGT 4410	Project Management Process:
	Planning and Implementation 3
MIS 4301 MIS 4302	Structured Systems Analysis
	and Design 1, 2
MIS 4307	Communications and Networking 3
MIS 4445	Database Management Systems 3
MIS 4446	Information Systems for Management 3
MIS 4485	Applied MIS Development Project 3
Electives*	
Natural science elective (BIO, CHM, or ESC)	3
Open electives	20
Business elective	3
Total Quarter Hours	174

*Telecommunications, Communications and Unix Programming
Certificate Electives

Your choice of one of the following Division of Continuing Education non-credit certificates will be accepted into the Management Information Systems AS and BSBA and the Operations Management AS and Operations Technology BS:

Communications Systems
Data Communications Systems
Telecommunications Systems
Unix Programming non-credit

Each certificate is equivalent to 18 q.h. of credit and is considered non-business.

Marketing Bachelor of Science in Business Administration Degree (Major Code 461)



See also: Marketing Associate in Science degree, page 81.

Liberal Arts	6		aı	uarter hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
ENG 4380	ENG 4381		Writing for the Professions 1	
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	, _ 0
			Problems 1,2,3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
HST 4101	2011 1201		The Civilization of the Ancie	
1101 1101			and Medieval Worlds	3
One History	course from th	e following:	and Medieval Worlds	3
		2, 4203, 4600 throu	igh 4646)	3
PHL 4100	100, 1201, 1201	, 1200, 1000 41100	Philosophical Thinking	3
PSY 4110			Introduction to Psychology:	J
			Fundamental Issues	3
One Psycholo	gy elective (Pa	SY)	1 diddineriai 155de5	3
SOC 4100	6) 515511.5 (2	,	Roles, Culture, and the Indiv	
SOC 4101			Inequality and Institutions	(3)
or			or	(0)
SOC 4102			Institutions and Social Chang	ge (3)
CMN 4101			Fundamentals of Human	(-)
			Communication	3
			\	
Business Ac	lministratio	n		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
BL 4101	BL 4102		Law 1, 2	6
FI 4301			Principles of Finance	3
FI 4302			Financial Management	
HRM 4301	HRM 4302		Organizational Behavior 1, 2	6
MGT 4101	MGT 4102		Introduction to Business	
			and Management 1, 2	6
MGT 4446			International Business	
			Management and Operation	
MIS 4101	MIS 4102		Introduction to Data Processi	
			and Information Systems 1,	
OM 4404			Service Operations Managem	
MGT 4450*	MGT 4451		Business Policy 1, 2	6

^{*}Students must complete 130 q.h. and all other Business Administration core courses before enrolling in Business Policy 1.



Choose one computer course from:		
MIS 4221	COBOL Programming 1	(3
or	or	
MIS 4241	Programming in BASIC 1	(3
or	or	ŕ
MIS 4276	C Programming 1	(3
or	07	
MIS 4236	Advanced PC Software	(3)
Major Concentration Courses		
MKT 4301	Introduction to Marketing 1	3
MKT 4302	Introduction to Marketing 2	
MKT 4310	Advertising Management 1	3 3 3 3 3 3 3 3 3
MKT 4411	Advertising Management 2	3
MKT 4315	Sales Management 1	3
MKT 4416	Sales Management 2	3
MKT 4320	Marketing Management	3
MKT 4430	Marketing Research 1	3
MKT 4431	Marketing Research 2	3
MKT 4453	International Marketing	3
MKT 4457	Competitive Strategy	3
Electives		
Natural science elective (BIO, CHM, or ESC)		3
Open electives		20
Business elective		3
Total Quarter Hours		174
Tomi Zanitti Hokio		A/ 1

Technology Degree Programs

Martha P. Welch, Assistant Dean, Director, Technology Degree Programs

270 Ryder Hall 617-373-2418 Agnes Jordan, Assistant to the Director, Technology Degree Programs

Program Consultants

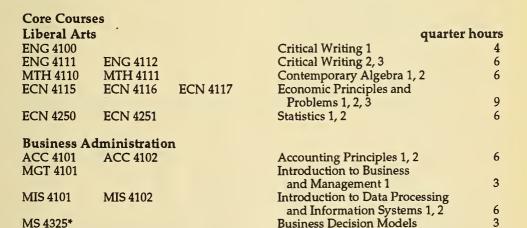
Professor Robert A. Parsons (College of Business Administration) (617-373-4749) Associate Consultant: William E. Grady (617-721-5770)

University College offers a certificate, an associate's degree, and a bachelor's

degree in Operations Technology.

Students who have completed the operations certificate program may then enroll in the associate's degree program. (Although credits earned in a certificate program may be applied toward this degree, completion of a certificate program is not required.) To receive the associate's degree, a student must successfully complete the 87 quarter hours of course credit specified for the degree.

Operations Management Associate in Science Degree (Major Code 491)



^{*}Not a prerequisite for OM 4404.



Major Concentration Courses	
OM 4301	Introduction to Operations
	Management (3)
or	or
OM 4404*	Service Operations Management (3)
OM 4302	Service Operations Management (3) Operations Analysis 3
OM 4314	Productivity Enhancement and
	Quality Management 3
OM 4317	Purchasing and Materials Management 3
OM 4321	Operations Planning and Control 3
OM 4326	Operations Management Policy 3
	or o
Nonbusiness Electives	20
Total Quarter Hours	87
*See page 235 for prerequisites. Take as one	e of the last courses in A.S. program after acquiring 80 q.h.

Operations Technology Bachelor of Science Degree (BS)

A Bachelor of Science degree is offered in Operations Technology. The technology program is designed to prepare the student to meet the challenge of interfacing technology and society. The technology student not only learns related disciplines but also becomes oriented in disciplines to which his or her technological skills will be

applied.

Graduates of science, engineering technology, liberal arts, or other selected programs in Northeastern University, community colleges, or other similar colleges and institutions who have an associate's degree or its equivalent may transfer applicable credits toward the degree requirements of the baccalaureate program in operations technology. No more than 44 quarter hours of business administration credits may be applied toward the Bachelor's Degree in Operations Technology.



Operations Technology Bachelor of Science Degree (Major Code 492)



				•
Liberal Arts			quarter	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
			Problems 1, 2, 3	9
ECN 4250	ECN 4251		Statistics 1, 2	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
One Psycholo	gy elective (P	SY)		3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4101			Inequality and Institutions	(3)
or			or	
SOC 4102			Institutions and Social Change	(3)
D				
Business Ad		า		
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
BL 4101	BL 4102		Law 1, 2	6
HRM 4301			Organizational Behavior 1	3
MGT 4101			Introduction to Business	
MIC 4101	MIS 4102		and Management 1	3
MIS 4101	WII5 4102		Introduction to Data Processing	,
MS 4325*			and Information Systems 1, 2 Business Decision Models	6
1015 4525			business Decision Wodels	3
Major Conce	entration Co	11*000		
OM 4404**	entiadon Co	uises	Service Operations Management	(3)
0r			or	(3)
OM 4301			Introduction to Operations	
OWI 4501			Management	(3)
OM 4302			Operations Analysis	3
OM 4314			Productivity Enhancement	
0111 1011			and Quality Management	3
OM 4317			Purchasing and Materials	•
			Management	3
OM 4321			Operations Planning and Control	3
OM 4326			Operations Management Policy	3
			,	
Nonbusines	s electives (s	uch as Science	, Engineering Technology,	
Liberal Arts	, or Criminal	Justice)†		86
Total Quarte	er Hours			174

†Telecommunication, Communications and Unix Programming Certificate Electives

Your choice of one of the following Division of Continuing Education non-credit certificates will be accepted into the Management Information Systems AS and BSBA and the Operations Management AS and Operations Technology BS:

> Communication Systems **Data Communications Systems** Telecommunications Systems **UNIX Programming non-credit**

Each certificate is equivalent to 18 q.h. of credit and is considered non-business.

^{*}Not a prerequisite for OM 4404.

^{**}Prerequisite: 80 q.h. of credit.

Criminal Justice and Security Degree Programs

Rose Doherty, Assistant Dean,
Director, Criminal Justice and Security Programs
266 Ryder Hall, 617-373-2416

Nancy Bandoian, Assistant to the Director, Criminal Justice and Security Programs

Program Consultant

Harvey Burstein, J.D. Professor College of Criminal Justice 617-373-3057

Purpose

Criminal Justice and Security programs are designed to provide a professional focus to students with a broadly based undergraduate education, to ensure that program graduates are prepared to enter or advance in careers in criminal justice or security administration or to enroll in graduate or professional schools.

The curriculum is built around a core of required courses after which the student selects a professional concentration. A choice of upper-level coursework is

offered.

Certificate Programs

Students who seek specialized background in criminal law may choose a certificate program in Legal Studies, which may be taken independently or in conjunction with degree study. Our newest certificate in Computer Crime and Security is another option for either those studying for a degree or those who are practicing Criminal Justice professionals. The certificate moves from entry-level familiarity with computers through pertinent criminal investigative procedures.

Associate in Science Degree Programs

Programs leading to the associate's degree are offered for those who wish to obtain a general background in corrections, policing, or security and who may later wish to pursue a bachelor's degree.

Candidates for the associate in science degree must complete a minimum of eighty-seven quarter hours of credit. This is one half of the requirements for the

bachelor of science degree.

Bachelor of Science Degree Programs

The Bachelor of Science degree is offered with specializations in corrections, policing, and security. Students should choose their specialization in consultation with a program advisor.

Each curriculum provides for not less than 174 quarter hours of work.

Course Sequence

Upon completion of the courses required for admission, students should elect professional courses in their major as they appear on the schedule. Liberal Arts courses should be taken to complete the student's schedule.

Corrections Associate in Science Degree (Major Code 949)

Core Course	s	quarte	er hour
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
COM 4101		Fundamentals of	
		Computer Literacy	4
HST 4202		American History 1848-1917	3
POL 4104		Introduction to American Governm	nent 3
PSY 4110		Introduction to Psychology:	
		Fundamental Issues	3
SOC 4100		Roles, Culture, and the Individual	
SOC 4186		Social Control	3
CI 4101		Administration of Criminal Justice	3 3 3
CI 4103	CI 4104	Criminology 1, 2	6
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CI 4110	C) 1107	Constitutional Law	6
CJ 4114	CJ 4115	Introduction to Law 1, 2	6
C) 1111	C) 1110	introduction to Daw 1, 2	· ·
Major Conce	entration Courses		
CJ 4301		American Correctional System	3
CJ 4302	CJ 4303	Correctional Administration 1, 2	6
CJ 4304	C) 1500	Jail Administration and Manageme	
CI 4311		Probation and Parole	3
C) 1011		1 TODATION WITH 1 MICH	
Electives			
	ce and security electives		6
Open electives			13
open electives			
Total Quarte	er Hours		87

Corrections Bachelor of Science Degree (Major Code 948)

Core Course	es	quarter l	hour
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
COM 4101		Fundamentals of	
		Computer Literacy	4
ECN 4115	ECN 4116 ECN 4117	Economic Principles and	
		Problems 1, 2, 3	9
HST 4101		The Civilization of the	
		Ancient and Medieval Worlds	3
HST 4103		The Civilization of the Modern World	
HST 4202		American History 1848-1917	3
PHL 4100		Philosophical Thinking	(3)
or		or	` '
PHL 4200		Logic	(3)
POL 4103		Introduction to Politics	3
POL 4104		Introduction to American Governmen	t 3
PSY 4110		Introduction to Psychology:	
		Fundamental Issues	3
PSY 4112		Introduction to Psychology:	
		Personal Dynamics	3
SOC 4100		Roles, Culture and the Individual	3
SOC 4102		Institutions and Social Change	3
SOC 4186		Social Control	3
Mathematics/	science courses (MTH 4110 or h		3 3 3 6 3 6 3 6 3 6 3
CJ 4101		Administration of Criminal Justice	3
CI 4103	CJ 4104	Criminology 1, 2	6
CI 4106	•	Criminal Justice Research	3
CJ 4107		Criminal Justice Statistics	3
CJ 4108	CJ 4109	Criminal Law and Procedure 1, 2	6
CJ 4110		Constitutional Law	
CJ 4114	CJ 4115	Introduction to Law 1, 2	6
		· ·	
Major Conce	entration Courses		
CJ 4301		American Correctional System	3
CJ 4302	CJ 4303	Correctional Administration 1, 2	6
CJ 4304	C) 4000	Jail Administration and Management	3
CJ 4311		Probation and Parole	3
C) 1011		1 100 GHOIL GHA I GIVIC	Ü
Electives			
	ce and security electives		24
Open elective			43
open elective	<u> </u>		10
Total Quarte	er Hours	1	74

Policing Associate in Science Degree (Major Code 947)

Core Course	s		quarter	hours
ENG 4100		Critical Writing 1	-	4
ENG 4111	ENG 4112	Critical Writing 2, 3		6
COM 4101		Fundamentals of		
		Computer Literacy		4
HST 4202		American History 1848-1917		3
POL 4104		Introduction to American Go	vernme	nt 3
PSY 4110		Introduction to Psychology:		
		Fundamental Issues		3
SOC 4100		Roles, Culture, and the Indivi	idual	3
SOC 4186		Social Control		3 3 6 6 3
CJ 4101		Administration of Criminal Ju	ustice	3
CJ 4103	CJ 4104	Criminology 1, 2		6
CJ 4108	CJ 4109	Criminal Law and Procedure	1, 2	6
CJ 4110		Constitutional Law		3
CJ 4114	CJ 4115	Introduction to Law 1, 2		6
Major Conce	entration Courses			
CJ 4201	CI 4202	Criminal Investigation 1, 2		6
CJ 4207		Comparative Police Systems		3
CJ 4209	CJ 4210	Police Management 1, 2		6
Electives				
	ce and security electives			6
	•			13
Open elective				13
Total Quarte	er Hours			87

Policing Bachelor of Science Degree (Major Code 946)

Core Course	3			quartern	lour
ENG 4100			Critical Writing 1		4
ENG 4111	ENG 4112		Critical Writing 2, 3		6
COM 4101			Fundamentals of		
COM 1101			Computer Literacy		4
ECN 4115	ECN 4116	ECN 4117	Economic Principles and		-
ECIV 4115	LCIV 4110	ECIV 4117	Problems 1, 2, 3		9
HST 4101				ion to and	7
H51 4101			The Civilization of the Anc	ient and	_
TTOT: 44.00			Medieval Worlds		3
HST 4103			The Civilization of the Mod		3
HST 4202			American History 1848-191	7	3
PHL 4100			Philosophical Thinking		(3)
or			or		
PHL 4200			Logic		(3)
POL 4103			Introduction to Politics		3
POL 4104			Introduction to American C	Government	3
PSY 4110			Introduction to Psychology		
			Fundamental Issues		3
PSY 4112			Introduction to Psychology	•	Ū
101 1112			Personal Dynamics	•	3
SOC 4100			Roles, Culture, and the Ind	ividual	3
SOC 4100			Institutions and Social Char		
				iige	3
SOC 4186		- / ATTIT 4110 - 1	Social Control		3
	science course	es (MTH 4110 or h			6
CJ 4101			Administration of Criminal	Justice	3 6 3 3
CJ 4103	CJ 4104		Criminology 1, 2		6
CJ 4106			Criminal Justice Research		3
CJ 4107			Criminal Justice Statistics		
CJ 4108	CJ 4109		Criminal Law and Procedu	re 1, 2	6
CJ 4110			Constitutional Law		3
CJ 4114	CJ 4115		Introduction to Law 1, 2		6
•			•		
Major Conce	entration Con	nrses			
CJ 4201	CJ 4202	arbeb	Criminal Investigation 1, 2		6
CI 4207	C) 4202		Comparative Police System		3
•	CT 4210			.5	6
CJ 4209	CJ 4210		Police Management 1, 2		0
171					
Electives					
Criminal justic	ce and security	y electives			24
Open electives	3				43
-					
Total Quarte	r Hours			1	74

Security Associate in Science Degree (Major Code 943)

Cama Camana	_		4
Core Course	es .	quarter h	lour
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
COM 4101		Fundamentals of	
		Computer Literacy	4
HST 4202		American History 1848-1917	3
POL 4104		Introduction to American Government	t 3
PSY 4110		Introduction to Psychology:	
		Fundamental Issues	3
SOC 4100		Roles, Culture, and the Individual	3
SOC 4186		Social Control	3
CJ 4101		Administration of Criminal Justice	3
CJ 4103	CJ 4104	Criminology 1, 2	6
CJ 4108	CI 4109	· Criminal Law and Procedure 1, 2	6
CJ 4110		Constitutional Law	3
CJ 4114	CJ 4115	Introduction to Law 1, 2	6
Major Conce	entration Courses		
CI 4403		Introduction to Security	3
CJ 4406	CI 4407	Security Administration 1, 2	6
CJ 4408	5 , 110.	Legal Aspects of Security Management	_
C , 1100		and Operations	3
CI 4411		Electronic Information Security	3
CJ 4412		Computer Crime and Security	3
171			
Electives			
	ce and security electives		6
Open electives	3		10
Total Ossanta	и Помия		87
Total Quarte	r mours		0/

Security Bachelor of Science Degree (Major Code 942)

Core Course	s		quarter l	ou
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
COM 4101			Fundamentals of	
			Computer Literacy	4
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	-
	2011 1110		Problems 1, 2, 3	9
HST 4101			The Civilization of the Ancient and	ĺ
			Medieval Worlds	3
HST 4103			The Civilization of the Modern World	3
HST 4202			American History 1848-1917	3
PHL 4100			Philosophical Thinking	(3)
or			or	(0)
PHL 4200		4	Logic	(3)
POL 4103			Introduction to Politics	3
POL 4104			Introduction to American Government	
PSY 4110			Introduction to Psychology:	
151 4110			Fundamental Issues	3
PSY 4112			Introduction to Psychology:	3
151 4112			Personal Dynamics	3
SOC 4100			Roles, Culture, and the Individual	3
SOC 4100				3
SOC 4102			Institutions and Social Change Social Control	3
		o /MTU /110 on hi		6
	science course	es (MTH 4110 or hi		0
CJ 4101 CJ 4103	CJ 4104		Administration of Criminal Justice	3
	CJ 4104		Criminology 1, 2	
CJ 4106 CJ 4107			Criminal Justice Research	3
•	CT 4100		Criminal Justice Statistics	6
CJ 4108 CJ 4110	CJ 4109		Criminal Law and Procedure 1, 2	3
CJ 4110 CJ 4114	CI 4115		Constitutional Law	6
CJ 4114	CJ 4115		Introduction to Law 1, 2	О
Maior Comos	mbalian Car			
Major Conce	ntration Col	irses	T . 1 .: . 0 ::	_
CJ 4403	CT 4405		Introduction to Security	3
CJ 4406	CJ 4407		Security Administration 1, 2	6
CJ 4408			Legal Aspects of Security Management	
OT 1444			and Operations	3
CJ 4411			Electronic Information Security	3
CJ 4412			Computer Crime and Security	3
771 41		•		
Electives				
Criminal justic	e and security	v electives		24
Open electives	3			4 0
Total Quarte	r Hours		1	174

Health Professions and Sciences Degree Programs

Dr. Paula M. Vosburgh, Assistant Dean, Director, Health Professions and Sciences Programs

266 Ryder Hall 617-373-2818

Program Directors and Coordinators

Area program directors and the Director of Health Professions and Sciences Programs have overall responsibility for the academic quality of the health programs in their areas of specialty. The program coordinators for each area serve as the chief academic advisors for students in their programs.

Health Professions

EMS: Paramedic Technology Program Director: David Rayne (University College) (617-272-5500)

HIA: Health Information Administration Program Director: Annalee Collins (University College) (617-373-2525)

HMG: Health Management Consultant: Joseph McNabb (Labouré College) (617-296-8300, ext. 4022)

HSC: Health Science Consultant: Nancy Warner (Bouvé College of Pharmacy and Health Sciences) (617-373-3320)

MLS: Medical Laboratory Science Program Director: Barbara Martin (Bouvé College of Pharmacy and Health Sciences) (617-373-3664)

NUR: Nursing (617-373-2818)

RAD: Radiologic Technology Acting Director: Valerie Lamb (University College) (617-373-3846) Assistant Director: Eileen Lathrop (University College) (617-373-3844)

Sciences

BIO: Biology Consultant: Dr. Fred A. Rosenberg (College of Arts and Sciences) (617-373-4042) Laboratory Coordinator: Kevin Mautte (Biology Department) (617-373-2260)

CHM: Chemistry Consultant: Dr. Philip W. LeQuesne (College of Arts and Sciences) (617-373-2867) Assistant Coordinator: Jean Cathron (College of Arts and Sciences) (617-373-2824)

Laboratory Coordinator: Bernard Lemire (College

of Arts and Sciences) (617-373-2811)

Biotechnology Consultant: Dr. John Monahan (CIBA Corning Diagnostics) (508-660-2066, between 7:00-9:00 p.m.)

ESC: Earth Science Consultant: Dr. Malcolm Hill (College of Arts and Sciences) (617-373-4381)

MTH: Mathematics Consultant: Francis X. Finigan (Educational Consultant) (617-484-8496)

Purpose

University College offers part-time and full-time programs in allied health to prepare students for advancement and service in hospitals and other health agencies.

The associate's and bachelor's degree programs are designed to provide both professional specialization and general education. Programs meet the standards of the appropriate accrediting body and/or of licensing or registration boards, where such exist.

Clinical Assignments

Clinical assignments are generally available for students whose programs require applied study in a clinical setting. Clinical practice is conducted at hospitals or other health agencies in the Greater Boston area. Positions in applied clinical studies are often offered on first-come, first-served basis. Arrangements should be made with the program's clinical coordinator as much in advance as possible.

Most clinicals require liability insurance and a health clearance. Students should check with the clinical coordinator of the program for exact details.

Students who accept clinical assignments in health facilities are expected to adhere to the requirements of the facilities, which are outside University control.

Special Studies and Certificates

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, and Field Work. Consult descriptions on pages 24-25. Students should be aware that special criteria exist for certain courses and the course description should be consulted.

Students can choose a certificate program to learn new skills or enhance skills they already have. If the student wishes to continue, many certificates are transferable into related degree programs. Health and Science certificates are listed below:

Advanced Environmental Sciences	(page 59)
Environmental Studies	(page 48)
Health Information Administration Post Baccalaureate	(page 114)
Human Development Services:	
Specialties in: Adolescent Care, Gerontology, and	
Infant/Child Care	(page 50-51)
Paramedic Technology	(page 124)
Phlebotomy Professional Preparation	(page 62)

Preprofessional Medical Courses

University College Health Professions courses often serve as gateways to the most desirable graduate schools, such as: schools of medicine, osteopathy, dentistry, podiatry, or optometry. Administrators and faculty are available to help students pursue entry to such schools throughout the year. Information sessions are held every quarter in conjunction with the open houses on the Boston campus. (See quarterly *Schedule Guides* for specific dates.) Members of the Health Professions Advisory Committee (HPAC) and others will be there to review the application procedures and answer questions.*

*Students interested in veterinary medicine should contact the HPAC Chair to become more informed of the unique entrance requirements in this field.



Medical School Admission Requirements

Northeastern University's Health Professions Advisory Committee provides academic advice and help with health professional school applications for students in any of the University's programs. Although advice is available to anyone enrolled in a course, the Committee can prepare evaluation letters only for those who have taken enough coursework at Northeastern to be able to have at least two Northeastern faculty members write letters to the Committee. Information Sessions are scheduled throughout the year. Call 617-373-2818 for the schedule and to reserve a place. Sources of Advice:

 General Advising, Application Procedures, and Entrance Exams Dr. C. H. Ellis, Jr., Chair Health Professions Advisory Committee **Biology Department** Northeastern University

445 Richards Hall 617-373-4032

 Questions on Physics Courses School of Engineering Technology 120 Snell Engineering Center 617-373-2500

 Course Schedules and Advising Dr. Paula Vosburgh, Health Professions Advisory Committee Assistant Dean, Director, Health Professions and Sciences Programs University College 266 Ryder Hall 617-373-2818

• Ms. Catherine Zeigler Acting Director, Office of Academic and Student Affairs University College 180 Ryder Hall 617-373-2400

Students must complete the courses below (see Course Sequences to meet Minimum Admission Requirements) before they may enroll in medical school, and should complete them before taking the school's particular admission test (MCAT, DAT, and so on. MCAT exam applications are available at the Department of Career Services, 120 Ryder Hall, 617-373-2430). Students intending to pursue premedical school studies should identify themselves to the Office of Academic and Student Affairs by calling 617-373-2400 prior to beginning their studies.

Course Sequences to Meet Minimum Admission Requirements

The following list shows acceptable course sequences that students can take at University College in preparation for health professional schools. Completing one sequence from each category should meet the minimum requirements of most medical or dental schools. If you have questions about whether other courses might be applicable, talk with Dr. Vosburgh or Dr. Ellis. Students are strongly encouraged to contact the medical or dental school(s) in which they are interested to obtain specific guidance on what courses the school may require for admission.

General Biology: BIO 4103, BIO 4104, BIO 4105 (lab must be taken). Other biology work, such as anatomy and physiology and microbiology, may be acceptable, depending on the professional school. General biology is highly recommended even if you have already taken the other courses.

CHM 4130, CHM 4131, CHM 4132—lab must be taken Chemical Principles: Organic Chemistry: CHM 4261, CHM 4262, CHM 4263—lab must be taken

PHY 4117, PHY 4118, PHY 4119, and labs PHY 4196, PHY 4197, General Physics:

PHY 4198*†

Math: MTH 4108, MTH 4120, MTH 4121* English: ENG 4100, ENG 4111, ENG 4112

Biochemistry:

Two additional areas that are often required are behavioral science and biochemistry. The following courses meet these requirements.

Behavioral Science: PSY 4110, PSY 4111, PSY 4112, and/or other psychology courses CHM 4371, CHM 4372, CHM 4373 or BIO 4246, BIO 4247, BIO 4248

*These courses are scheduled through the School of Engineering Technology. Call 617-373-2500. +Some medical schools have allowed PHY 4101 and PHY 4102 College Physics 1 and 2 to be used for admissions. Before choosing this sequence, contact the school you wish to apply to for their preference for a physics course sequence.

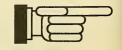
Bachelor's Degree in Biological Science offers Professional Opportunities

In offering this baccalaureate degree program in Biological Science, University College recognizes the critical role that a traditional biology major can play in preparing students for several distinguished professions. The program provides both a broad spectrum of biology courses and a firm foundation in the liberal arts and sciences. The balanced and comprehensive curriculum gives the students the background valued by medical, dental and veterinary schools. It would also be useful to those who desire to prepare for careers teaching science in secondary schools.

Biological Science Bachelor of Science Degree (Major Code 818)



Core Cours	es		quarte	r hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111	MTH 4112	Contemporary Algebra 1, 2, 3	9
PSY or	SOC elective	es	Psychology and Sociology	9
COM 4101			Foundations of Computer Literacy	4
LN or	MIS		Modern Language or Computer	
			Language	8 or 9
Economics (E	CN) Courses o	f your choice	<u> </u>	9
	') Courses of you			9
Major Conc	entration Co	M1#0.00		
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
BIO 4175	BIO 4176	DIO 4103	Human Anatomy and	12
DIO 4173	DIO 4170		Physiology 1, 2	6
BIO 4190	BIO 4191		Microbiology 1, 2	
BIO 4224	BIO 4225		Ecology 1, 2	6
BIO 4235	BIO 4236		Genetics 1, 2	6
BIO 4237	DIO 1200		Genetics Laboratory	2
BIO 4246	BIO 4247		Cell Biology 1, 2	6 6 2 6 2
BIO 4248	210 121		Cell Biology Laboratory	2
CHM 4130	CHM 4131	CHM 4132	Chemical Principles 1, 2, 3	12
			(formerly General Chemistry	
			CHM 4111, 4112, 4113)	
CHM 4224			Analytical Chemistry	
			(summer quarter)	4
CHM 4261	CHM 4262		Organic Chemistry 1, 2	8
MTH 4130	MTH 4131		Fundamentals of Calculus 1, 2	6
MTH 4132			Fundamentals of Calculus 3	(3)
or			or	
ECN 4250			Statistics 1	(3)
PHY 4117	PHY 4118	PHY 4119	Physics 1, 2, 3	12
PHY 4196	PHY 4197	PHY 4198	Physics Laboratory 1, 2, 3	3



Biological	Science electives (Choose 15 q.h.	ı. from the following)	
BIO 4177	· ·	Human Anatomy and Physiology 3	3
BIO 4192		Microbiology 3	3
BIO 4226		Ecology 3	3
BIO 4258	BIO 4259	Advanced Human Physiology 1, 2	6
BIO 4260	·	Cell, Tissue, and Organ Culture	3
BIO 4300		Computer Applications in Sciences	3
BIO 4320		Medical Microbiology	4
BIO 4374	BIO 4375	Histology 1, 2	6
BIO 4411	BIO 4412	Embryology and Development 1, 2	6
BIO 4425		Endocrinology	3
BIO 4441		Parasitology	4
BIO 4461		Immunology	4
BIO 1467*		Molecular Biology*	4
BIO 4600		Scanning Electron Microscopy	4
BIO 4601		Transmission Electron Microscopy	4
BIO 4602		Principles of Light Microscopy and	
		Histotechniques	4
Electives a	s needed to complete credits		
Total Quar	rter Hours		174

*Total Quarter Hours

*This is a Day School course offered through the College of Arts and Sciences.

Biotechnology

Associate in Science Degree

The Associate in Science degree program in Biotechnology helps provide a strong science foundation required for entry level employment opportunities in biotechnology. Positions can be found both in the laboratory and in manufacturing. Employment opportunities exist both in biomedical and clinical labs as well as in the biotechnology industry.

Bachelor of Science Degree

The Bachelor of Science degree program in Biotechnology integrates theoretical and laboratory courses from the fields of biology and chemistry. The program is designed to help prepare students for careers in the biotechnology industry or other related fields. Employment opportunities may be found in biotechnology, biomedical, pharmaceutical, veterinary or agricultural laboratories.

Biotechnology Associate in Science Degree (Major Code 812)



Core Course	s		quarte	r hours	
ENG 4100			Critical Writing 1	4	
ENG 4111	ENG 4112		Critical Writing 2, 3	6	
MTH 4110	MTH 4111	MTH 4112	Contemporary Algebra 1, 2, 3	9	
Major Conc	entration Co	urses			
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12	
BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	9 3	
BIO 4455			Introduction to Biotechnology	3	
CHM 4130	CHM 4131	CHM 4132	Chemical Principles 1, 2, 3 (formerly General Chemistry, CHM 4111, 4112, 4113)	12	
CHM 4261 or	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	(12)	
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	(9)	
PHY 4101	PHY 4102	,	College Physics 1, 2	`8	
Electives					
Liberal Arts; Chemistry, Biology, or Calculus as needed to complete total credits					
Total Ouarter Hours					

Biotechnology Bachelor of Science Degree (Major Code 813)



Core Course	s		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111	MTH 4112	Contemporary Algebra 1, 2, 3	9
BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
CHM 4130	CHM 4131	CHM 4132	Chemical Principles 1, 2, 3	12
			(formerly General Chemistry,	
			CHM 4111, 4112, 4113)	
PHY 4101	PHY 4102		College Physics 1, 2	8
Liberal Arts co	ourses of your	choice		18
	·			
Major Conce	entration Co	urses		
BIO 4190	BIO 4191	BIO 4192	Microbiology 1, 2, 3	9
BIO 4235	BIO 4236	BIO 4237	Genetics 1, 2, and Lab	8
BIO 4246	BIO 4247	BIO 4248	Cell Biology 1, 2, and Lab	8
BIO 4374	BIO 4375	BIO 4376	Histology 1, 2, 3	9
BIO 4455			Introduction to Biotechnology	3
CHM 4221	CHM 4222	CHM 4223	Analytical Chemistry 1, 2, 3	9
CHM 4261	CHM 4262	CHM 4263	Organic Chemistry 1, 2, 3	12
CHM 4321	CHM 4322	CHM 4323	Instrumental Analysis 1, 2, 3	9
CHM4371	CHM4372	CHM 4373	Biochemistry 1, 2, 3	9
D' . (. 1 1 .				
Biotechnolo		•		
Choose 20 q.h.			1.00	0
BIO 4175	BIO 4176	BIO 4177	Anatomy and Physiology 1, 2, 3	9
BIO 4224	BIO 4225	BIO 4226	Ecology 1, 2, 3	9
BIO 4411	BIO 4412		Embryology and Development 1, 2	(6)
BIO 4441			Parasitology	(4)
BIO 4461			Immunology	(4)
CHM 4271			Introduction to Immunodiagnostics	(3)
CHM 4391			Introduction to Recombinant DNA	(3)
CHM 4392			Biomolecular Separations	(3)
BIO 4501			Development of New Virus Vaccines	(3)
BIO 4300			Computer Application in Science	(3)
BIO 4600			Scanning Electron Microscope	(4)
BIO 4601			Transmission Electron Microscope	(4)
BIO 4602			Principles of Light Microscopy	(4)
			and Histotechniques	(4)

General Electives as needed to complete total credits

Total Quarter Hours	174

Health Information Administration

The Health Information Administrator's varied responsibilities relate to information systems and include the organization, operation and management of health information services. Required skills for this profession include the ability to design health information and retrieval systems; develop, analyze and evaluate health records and indexes; work with medical and administrative staffs within health care facilities developing methods for evaluation of patient care; and conduct research projects using health information.

Health Information Administrators work in a variety of health care settings. About 75% are employed by hospitals and ambulatory care facilities as directors, assistant directors or supervisors of Health Information Departments. They are also employed by government agencies, insurance companies, law firms, and health information programs at colleges and universities. A growing number of Health Information Administrators work for computer companies that market

health information software.

Students who successfully complete this program are eligible to take the national credentialing examination conducted by the American Health Information Management Association. Candidates who successfully complete this examination are known as Registered Record Administrators (RRA).

It is strongly urged that potential students attend an information session and speak with the Program Director. Call 617-373-2525 for a schedule of information

sessions.

Professional Programs

The Health Information Program at University College offers a Bachelor's

Degree Program and a Post-Baccalaureate Certificate Program.

The Bachelor of Science Degree Program is designed for individuals who wish to obtain a degree in health information administration. The Post-Baccalaureate Certificate Program is designed for those with a bachelor's degree in any area, who wish to redirect their careers. Previous college credits obtained at another accredited college or university may be transferred into either program using a Transfer Credit Petition Form obtained from University College's Office of Academic and Student Affairs.

Each program may be completed on a part-time or accelerated basis. Although students may begin either program at anytime of the year, there are established suggested patterns of courses that begin in either the Summer or Fall quarters of each year. Prior to beginning any of these patterns, Post-Baccalaureate Certificate students must have completed the pre-requisite coursework in statistics, anatomy and physiology and computer literacy. These are explained at the information sessions mentioned above.

Specific courses designated (*) in the curricula of both programs require a grade of C or better. Only one professional course may be repeated. Students who receive a grade of D in more than one professional course will be withdrawn from the program. A quality-point average of 2.5 is essential in order to enter any of the three clinical courses. Post-Baccalaureate Certificate students must complete their program of study with at least a QPA of 2.5 in order to receive a certificate from University College. Degree and certificate students who successfully complete their programs of study are eligible to take the national credentialing examination.

Health Information Administration Bachelor of Science (Degree (Major Code 864)



	Core Course	s		guar	ter hours
	ENG 4100			Critical Writing 1	4
	ENG 4111	ENG 4112		Critical Writing 2, 3	6
	MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
	BIO 4103	BIO 4104	BIO 4105	Biology 1, 2, 3	12
	BIO 4175	BIO 4176	BIO 4177	Human Anatomy and	12
	DIO 1175	DIO 4170	DIO 4177	Physicles 1 2 2*	0
	ECN 4115	ECN 4116	ECN 4117	Physiology 1, 2, 3*	9
	ECIV 4115	ECN 4110	ECIV 4117	Economic Principles and	
	ECNI 40E0			Problems 1, 2, 3	9
	ECN 4250			Statistics 1	3
	EC) 1 4054			0. 4.4. 6	
	ECN 4251			Statistics 2	(3)
	or			or	
	HMG 4200			Health Science Statistics	(3)
	Psychology (P				9
Þ	History (HST)	or Political Sc	cience (POL) Cours	es of your choice	9
	Sociology (SO	C) Courses of y	our choice	, ,	9
	Major Conce	ntration Co	urses		
	COM 4101			Foundations of Computer	
	CO 111 1101			Literacytt	4
	HMG 4215			Health Law* ††	3
	HMG 4301				3
				Health Care Delivery Systems* ††	3
	HMG 4400			Health Care Finance*	3
	HMG 4411			Research for Managers*	3 3 3 3
	HRM 4301			Organizational Behavior*	3
	HRM 4310			Human Resource Management	
	HSC 4301	HSC 4302		Pathophysiology 1, 2*	6
	Professional C	Courses			
	HIA 4300			Medical Terminology*†	4
	HIA 4315	HIA 4316		Health Information	
				Administration 1, 2*	- 6
	HIA 4328	HIA 4329		Nomenclature and	
				Classification 1, 2*	6
	HIA 4335	HIA 4336	HIA 4337	Clinical Practicum 1, 2, 3*	8
	HIA 4400			Specialized Health Information	
	111111100			Systems*	3
	HIA 4410			Quality Assurance*	4
	HIA 4330	HIA 4431		Health Information Management 1	
	HIA 4500	111V 4401			, 2
	111A 4500			Health Information Computer	3
	LITA 4520			Systems*	3
	HIA 4520			Topics in Health Information	0
	TIT 4 4500			Administration*	3
	HIA 4530			Health Information Systems	
				Analysis*	3
	General Electi	ves			21

^{*}Students must obtain a grade of C or better in this course.

Total Quarter Hours

174

[†]A challenge examination is available for this course. Call 617-373-2525 for details.

ttlt is recommended that these courses be taken at the beginning of the student's course of study.

Health Information Administration Post-Baccalaureate Certificate (Major Code 868)



Prerequisite Coursework

- 1. One year of Anatomy and Physiology with Laboratory: grade of C or better. Suggested courses: BIO 4175, 4176, 4177
- 2. Introduction to Computers. Suggested course: COM 4101.
- 3. Descriptive Statistics. Suggested course: HMG 4200.

Core Cours	es		quarter	hour
HMG 4215			Health Law* ††	3
HMG 4301			Health Care Delivery Systems * ††	3
HMG 4400			Health Care Finance*	3 3 3 3
HMG 4411			Research for Managers*	3
HRM 4310			Human Resource Management	3
HSC 4301	HSC 4302		Pathophysiology 1, 2*	6
Professional	Courses			
HIA 4300			Medical Terminology*†	4
HIA 4315	HIA 4316		Health Information	
			Administration 1, 2*	6
HIA 4328	HIA 4329		Nomenclature and	
			Classification 1, 2*	6
HIA 4335	HIA 4336	HIA 4337	Clinical Practicum 1, 2, 3*	8
HIA 4400			Specialized Health Information	
			Systems*	3
HIA 4410			Quality Assurance*	4
HIA 4430	HIA 4431		Health Information Management 1, 2*	
HIA 4500			Health Information Computer	
			Systems*	3
HIA 4520			Topics in Health Information	
			Administration*	3
HIA 4530			Health Information Systems	
			Analysis*	3
Total Quart	er Hours			67

Total Quarter Hours *Students must receive a C or better in this course.

†A challenge examination is available for this course. Call 617-373-2525 for details.

ttll is recommended that these courses be taken at the beginning of the student's course of study.

Health Management

The health care industry is changing rapidly in response to increasing competition, rising costs, technological advances, the growth of alternative delivery systems, and an aging population.

University College's Bachelor of Science Degree program in Health Management is intended for those who wish to prepare for entry into or advancement in

managerial positions in the health care field.

The program combines professional competencies with a liberal arts education to help direct students toward either entry-level positions or positions of increasing responsibility in health services administration. The curriculum also provides a foundation for graduate studies in MBA and MHA programs.

Health Management Bachelor of Science Degree (Major Code 860)



Core Cours	es		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111	MTH 4112	Contemporary Algebra 1, 2, 3	9
HMG 4200	ECNI 4116	ECNI 4445	Health Science Statistics	3
ECN 4115	ECN 4116	ECN 4117	Economic Principles and	
SOC 4100			Problems 1, 2, 3	9
POL 4103			Roles, Culture, and the Individual	3
PSY 4110			Introduction to Politics	3
101 1110			Introduction to Psychology: Fundamental Issues	3
COM 4101			Foundations of Computer Literacy	4
			Touridations of Computer Literacy	*
	entration Cou	ırses		
ACC 4101	ACC 4102		Accounting Principles 1, 2	6
FI 4301			Principles of Finance	3
FI 4302	TD (C) (101		Financial Management	3
HMG 4100 '	HMG 4101		Managing Health Services	
HMG 4215			Organizations 1, 2*	6
HMG 4301		•	Health Care Delivery Systems*	3
HMG 4411			Health Care Delivery Systems* Research for Managers	3
11110 1111			Nesearch for Managers	3
	Concentration	Courses		
HMG 4325			Health Planning and Regulation	3
HMG 4390			The Patient's Impact on	
TD 10 1100	TD 10 1101		Decision-Making	3
HMG 4400	HMG 4401		Health Care Financial	
LD 4C 42(0	**		Management 1, 2	6
HMG 4260			Senior Seminar in Health	1
HMG 4429			Care Management † Health Care Delivery's	1
THVIG 442)			Changing Environment †	2
HMG 4440			Health Care Operations	2
11.10 1110			Management	3
HMG 4445	HMG 4446		Health Care Marketing and	
			Communication 1, 2	6
HMG 4580			Information Processing in Health Car	e 3
HMG 4650	HMG 4651		Health Management	
			Practicum 1++, 2++	12
HSC 4310			Public Health 1	3
D ()				
	Specialization			24
see Option 1,	2 or 3 on next	page		24
Electives				
Liberal Arts e	lectives			10
Health Science	e electives			6
Science electiv	ves (CHM, BIO	, ESC, MTH)		12
Open elective	s			9
Total Quarte	er Hours			174
Total Qualte	110415			L/ Z

^{*}It is strongly advised that students take these courses at the beginning of their studies.

†Must be taken concurrently during the student's last year in the program.

ttStudents must have completed seventy-five percent of their degree requirements before taking these courses. Students must apply for each assignment no later than one full quarter prior to the desired starting date. Petition forms and detailed directions can be obtained by calling the Program Office, 617-373-2818.

Professional Specialization Options

Students complete their course of study by electing one of the following 27 quarter-hour options designed to meet their professional objectives.

Option 1: Continuing Care Administration

HMC 4601

HMC 4600

Licensure as a nursing home administrator requires an internship, a licensure examination, and a bachelor's degree. The required courses in this option help prepare students for the Massachusetts Licensure Examination. Students are advised, however, to contact the Board of Registration of Nursing Home Administrators for the specific eligibility requirements needed for this examination.

Long-Term Care

HMG 4600	HMG 4601	HMG 4602	Long-Term Care	4.0
Characteristics		11 6.11	Administration (A, B, C)*	18
	uarter nours jro	m the following:	Capial Camaratalana	(2)
SOC 4225			Social Gerontology	(3)
HMG 4300			Home Health Care	(3)
REC 4401			The Nursing Home Experience	(3)
REC 4460			The Process of Aging	(3)
HSC 4210			Basic Nutrition	(3)
HSC 4220		4004.05	Basic Pharmacology	(3)
This series of	courses offered	in 1994-95 academi	ic year.	
Option 2: (Community F	Health Manage	ment	
HMG 4310	HMG 4311	· ·	Principles and Practices of	
		,	Community Health 1, 2	6
MLS 4341	MLS 4342		Epidemiology 1, 2	6
HSC 4311			Public Health 2	3
Choose 12 qua	rter hours from	the following:		
HMG 4300		, ,	Home Health Care	(3)
HMG 4550	HMG 4551		Contemporary and Controversial	` ´
			Health Care Issues 1, 2	(6)
HMG 4610			Principles and Practices of	• •
			Community Mental Health	(3)
HRM 4320			Techniques of Employee Selection	(3)
HRM 4340			Public Sector Collective	
			Bargaining in the United States	(3)
HSC 4315			Environmental Problems and Health	(3)
MKT 4335			Public Relations 1	(3)
SOC 4215			Medical Sociology	(3)
SOC 4241			Human Services Professions	(3)
SOC 4240			Sociology of Human Service	, ,
			Organizations	(3)
Ontine 2: (Zamawa1			•
Option 3: 0			ACCOUNT THE TABLE	4.5
			MLS, NUR, REC, RAD)	15
	rter hours from	the following:		(0)
ECN 4130			Medical Economics	(3)
ECN 4321			Urban Economic Problems and Policie	
ENG 4380			Writing for the Professions 1	(3)
FI 4325			Budgeting and Planning	(3)
Fl 4421			Credit Management	(3)
FI 4426			Financial Control	(3)
HRM 4321			Wage and Salary Administration	(3)
HRM 4322			Employee Benefits	(3)
HRM 4346			Negotiations in Labor Management	(3)
MGT 4320			Managing Change	(3)
POL 4300			Introduction to Public Administration	(3)

Health Science

With the rapidly changing health care industry and the steadily expanding awareness of the importance of health, many new and exciting opportunities exist for those interested in the health care field. The Bachelor of Science in Health Science program seeks to address the needs of both health professionals seeking a broad-based baccalaureate degree as well as those interested in investigating a variety of disciplines within health. For those who already possess training as health professionals, maximum transfer of professional coursework is possible. Those entering from other fields or investigating career options in health will find a curriculum which allows flexibility in choosing coursework towards a specific goal. A program of upper-level courses and advanced sciences allows the student flexibility in pursuing a variety of post baccalaureate options as well.

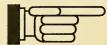
Students should be aware that in order to work in certain health professions, certification or licensure is required. If you are interested in a field such as: Medical Laboratory Science, (specific tracks of courses exist in Clinical Chemistry, Clinical Microbiology, Hematology, Blood Banking and Clinical Immunology); Sonography; Paramedic; etc., you should see the appropriate individual in that area. Please refer to page 105 for names and telephone numbers of consultants in

various health fields.

Health Science Bachelor of Science in Health Science Degree (Major Code 865)



Liberal Arts ENG 4100 Critical Writing 1 ENG 4111 ENG 4112 Critical Writing 2, 3 6 Liberal Arts courses of your choice (AFR, ART, ASL, BIO, CHM, CMN, DRA, ECN, ENG, ESC, HST, JRN, LN, MTH, MUS, PHL, PHY, POL, PSY, SOA, SOC, TCC) MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 9 Basic Sciences BIO 4103 Biology 1 Bio 4104 BIO 4175 BIO 4176 BIO 4177 Human Anatomy & Physiology 1, 2, 3 BIO 4190 CHM 4130 CHM 4131 CHM 4132 Chemical Principles 1, 2, 3 12 (formerly General Chemistry, CHM 4111, 4112, 4113) COM 4101 Foundations of Computer Literacy Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4236 BIO 4237 Genetics 1, 2, and Lab BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 BIO 4425 BIO 6230 BIO 44455 Introduction to Biotechnology (3) BIO 44455
ENG 4111 ENG 4112 Critical Writing 2, 3 Liberal Arts courses of your choice (AFR, ART, ASL, BIO, CHM, CMN, DRA, ECN, ENG, ESC, HST, JRN, LN, MTH, MUS, PHL, PHY, POL, PSY, SOA, SOC, TCC) MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 Biology 1 Biology 1 Biology 2 or 3 Biology 2 or 3 Biology 1 Biology 1 Biology 1 Biology 2 or 3 Biology 1 Biology 1 Biology 1 Biology 1 Biology 2 or 3 Biology 1 Biology 1 Biology 1 Biology 1 Biology 1 Biology 2 or 3 Biology 1 Biology 3 Biology 4 Biology 4 Biology 4 Biology 4 Biology 4 Biology 3 Biology 4 Biology 5 Biology 5 Biology 6 Biology 7 Biology 8 Biology 7 Biology 8 Biology 7 Biology 8 Biology 7 Biology
Liberal Arts courses of your choice (AFR, ART, ASL, BIO, CHM, CMN, DRA, ECN, ENG, ESC, HST, JRN, LN, MTH, MUS, PHL, PHY, POL, PSY, SOA, SOC, TCC) MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 9 Basic Sciences BiO 4103 Biology 1 4 BIO 4104 or BIO 4105 Biology 2 or 3 4 BIO 4175 BIO 4176 BIO 4177 Human Anatomy & Physiology 1, 2, 3 9 BIO 4190 Microbiology 1 3 CHM 4130 CHM 4131 CHM 4132 Chemical Principles 1, 2, 3 12 (formerly General Chemistry, CHM 4111, 4112, 4113) COM 4101 Foundations of Computer Literacy 4 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4425 Endocrinology (3) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
ECN, ENG, ESC, HST, JRN, LN, MTH, MUS, PHL, PHY, POL, PSY, SOA, SOC, TCC) MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 9 Basic Sciences BIO 4103 Biology 1 4 BIO 4104 or BIO 4105 Biology 2 or 3 4 BIO 4175 BIO 4176 BIO 4177 Human Anatomy & Physiology 1, 2, 3 9 BIO 4190 Microbiology 1 3 CHM 4130 CHM 4131 CHM 4132 Chemical Principles 1, 2, 3 12 (formerly General Chemistry, CHM 4111, 4112, 4113) COM 4101 Foundations of Computer Literacy 4 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4258 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4425 Endocrinology (3) BIO 4425 Introduction to Biotechnology (3)
TCC MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 9
MTH 4110 MTH 4111 MTH 4112 Contemporary Algebra 1, 2, 3 9 Basic Sciences BIO 4103 Biology 1 4 BIO 4104 or BIO 4105 Biology 2 or 3 4 BIO 4175 BIO 4176 BIO 4177 Human Anatomy & Physiology 1, 2, 3 9 BIO 4190 Microbiology 1 3 12 CHM 4130 CHM 4131 CHM 4132 Chemical Principles 1, 2, 3 12 (formerly General Chemistry, CHM 4111, 4112, 4113) Foundations of Computer Literacy 4 Advanced Sciences Choose 12 quarter hours from the following: Ecology 1, 2, 3 (9) BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4425 Endocrinology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology
Basic Sciences BIO 4103 BIO 4104 or BIO 4105 BIO 4175 BIO 4176 BIO 4177 BIO 4190 CHM 4130 CHM 4131 CHM 4132 COM 4101 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4235 BIO 4236 BIO 4237 BIO 4246 BIO 4247 BIO 4247 BIO 4248 BIO 4258 BIO 4258 BIO 4259 BIO 4259 BIO 4255 BIO 4259 BIO 4255 BIO
BIO 4103 BIO 4104 or BIO 4105 BIO 4175 BIO 4176 BIO 4177 BIO 4190 CHM 4130 CHM 4131 CHM 4132 COM 4101 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4235 BIO 4235 BIO 4246 BIO 4247 BIO 4248 BIO 4258 BIO 4259 BIO 4250 BIO 4258 BIO 4259 BIO 4250
BIO 4103 BIO 4104 or BIO 4105 BIO 4175 BIO 4176 BIO 4177 BIO 4190 CHM 4130 CHM 4131 CHM 4132 COM 4101 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4235 BIO 4235 BIO 4246 BIO 4247 BIO 4248 BIO 4258 BIO 4259 BIO 4250 BIO 4258 BIO 4259 BIO 4250
BIO 4104 or BIO 4105 BIO 4175 BIO 4176 BIO 4177 BIO 4190 CHM 4130 CHM 4131 CHM 4132 COM 4101 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 BIO 4235 BIO 4236 BIO 4237 BIO 4246 BIO 4247 BIO 4248 BIO 4258 BIO 4259 BIO 4258 BIO 4259 BIO 4250
BIO 4175 BIO 4190 CHM 4130 CHM 4131 CHM 4132 COM 4101 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4235 BIO 4236 BIO 4247 BIO 4248 BIO 4258 BIO 4259 BIO 4258 BIO 4259 BIO 4250 BI
BIO 4190
CHM 4130 CHM 4131 CHM 4132 Chemical Principles 1, 2, 3
COM 4101 Foundations of Computer Literacy 4
CHM 4111, 4112, 4113) Foundations of Computer Literacy 4 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
COM 4101 Foundations of Computer Literacy 4 Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
Advanced Sciences Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
Choose 12 quarter hours from the following: BIO 4224 BIO 4225 BIO 4226 Ecology 1, 2, 3 (9) BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
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BIO 4235 BIO 4236 BIO 4237 Genetics 1, 2, and Lab (8) BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
BIO 4246 BIO 4247 BIO 4248 Cell Biology 1, 2, and Lab (8) BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
BIO 4258 BIO 4259 Advanced Human Physiology 1, 2 (6) BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
BIO 4320 Medical Microbiology (4) BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
BIO 4425 Endocrinology (3) BIO 4455 Introduction to Biotechnology (3)
BIO 4455 Introduction to Biotechnology (3)
$DIO AA(1) \qquad Immunology $
BIO 4461 Immunology (4)
CHM 4221 CHM 4222 CHM 4223 Analytical Chemistry 1, 2, 3 (9)
CHM 4224 Analytical Chemistry (summer only) (4) CHM 4261 CHM 4262 CHM 4263 Organic Chemistry 1, 2, 3 (12)
MTH 4130 MTH 4131 MTH 4132 College Calculus 1, 2, 3 (9) PHY 4101 PHY 4102 College Physics 1, 2 (8)
PHY 4196 PHY 4197 PHY 4198 Labs (15)
Basic Concentration Courses
Required
HMG 4215 Health Law 3 HMG 4301 Health Care Delivery 3 HSC 4310 Public Health 1 3 MLS 4341 Epidemiology 1 3
HSC 4310 Public Health 1 3
MLS 4341 Epidemiology 1 3
Choose 18 quarter hours from the following:*
EMS 4107 EMT-Basic (9)
HMG 4550 HMG 4551 Contemporary and Controversial
Health Care Issues (6)
HSC 4210 Basic Nutrition (3)
HSC 4220 Basic Pharmacology (3)
HSC 4220 Basic Pharmacology (3) HSC 4311 Public Health 2 (3)
HSC 4613 Oral Microbiology (3)
HSC 4614 HSC 4615 Advanced Periodontology 1, 2 (6)
MLS 4104 Introduction to Phlebotomy (4)



MLS 4301 MLS 4342 RAD 4100		Medical Lab Orientation Epidemiology 2 Radiologic Technology Orientation	(2) (3) (3)
Major Con	centration Cours	es	
Required		1	
HMG 4100	HMG 4101	Managing Health Services Organizations 1, 2	6
HMG 4200		Health Science Statistics	3
HSC 4301	HSC 4302	Pathophysiology 1, 2	6
HSC 4320	HSC 4321	Training and Development	U
		in the Health Professions 1, 2	6
Choose 21 aug	arter hours from the i	following electives.**	U
HMG 4310	HMG 4311	Principles and Practices of	
		Community Health 1, 2	(6)
HSC 4315		Environmental Problems and Health	(3)
HSC 4350		Introduction to Environmental	(0)
		Health and Safety	(3)
HSC 4600		Advanced Nutrition	(3)
HSC 4601		Advanced Pharmacology	(3)
HSC 4610		Geriatric Nutrition	(3)
MLS 4321		Hematology	(3)
MLS 4322	MLS 4323	Morphologic Hematology 1, 2	(6)
MLS 4365		Quality Control	(3)
RAD 4304		Cross-Sectional Anatomy	(4)
RAD 4400		Head & Neck Anatomy	(3)
RAD 4450		Comp. Body Tomography	(3)
RAD 4460		Medical Imaging Quality Assurance	(3)
REC 4460		Process of Aging	(3)

Electives as needed to complete total credits.

Total Quarter Hours

174

^{*}Entry level professional courses (Medical Laboratory Science, Nursing, Radiologic Technology, Paramedic Technology, etc.) may fulfill this requirement. It is imperative that students who desire to use this option have their courses pre-approved by the Office of Academic and Student Affairs. This should be done at the start of your coursework in University College.

^{**}Others may be considered by petition. Specialized tracks are available in Medical Laboratory Science and Pre-medical Studies. See page 107.

Medical Laboratory Science

Medical laboratory science (MLS) is concerned with laboratory examination of material necessary for monitoring health and for diagnosing and treating illness. Medical laboratory technicians and technologists work in a variety of specialized fields such as microbiology, blood banking, hematology immunology, or clinical

chemistry, or as generalists in all of these areas.

The medical laboratory technician holding an associate's degree, works under the direct supervision of a medical technologist and performs common medical laboratory tests. The medical technologist, who must have a bachelor's degree, is considered qualified to perform tests with little or no direct supervision. Students interested in progressing past a technician level in Medical Laboratory Science should investigate the Bouvé College of Pharmacy and Health Sciences' full-time day bachelor's degree program or University College's part-time evening Bachelor of Science in Health Science program. It is imperative that students meet and plan out their coursework with the Medical Laboratory Science Program Director (617-373-3664) prior to beginning work in this major. This will assure appropriate course selection in order to qualify for clinical certification(s). With additional education or experience, medical technologists can become educators, researchers, or supervisors. They may serve as sales and technical representatives for scientific supply and equipment companies or serve in government positions.

The associate degree program is conducted in affiliation with Boston-area hospitals and is accredited by the Committee of Allied Health Education and Accreditation of the American Medical Association. Upon successful completion of the associate's degree program, the student is eligible to take a national certification examination given by the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Path-

ologists.

The basic courses in medical laboratory science, science, and education are offered evenings, but the advanced medical laboratory science courses and the clinical experience are offered full-time during the day only.

Associate's Degree Professional Requirements

A clinical applied study program (or appropriate work experience) is required for this degree. Work experience is acceptable if it meets the requirements for certification of either the National Certification Agency for Medical Laboratory Personnel or the Board of Registry of the American Society of Clinical Pathologists. Students without appropriate work experience can apply for clinical applied studies through the University College MLS Program Director, 206 Mugar, 617-373-3664. This should be done one year in advance of the anticipated entry into clinical courses.

To meet this program's residency requirement, the student must complete 12 quarter hours of MLS coursework at Northeastern University. Prerequisites for clinical applied studies are a minimum of a 2.0 quality-point average in the required courses and a C- or better in each medical laboratory science (MLS) course. These basic courses are available during the evening and on an every-other-year basis through the Bouvé College of Pharmacy and Health Sciences. Students register for these courses in the Bouvé College of Pharmacy and Health Sciences, 206 Mugar. Tuition is at a special rate. These courses should be completed within three years of applying to the AD-MLT Clinical Applied Studies.

Medical Laboratory Science–Medical Laboratory Technician Associate in Science Degree (Major Code 800)

Core Cours	es		quarter	hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
BIO 4103	BIO 4105		Biology 1, 3	8
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and	
			Physiology 1, 2, 3	9
CHM 4130	CHM 4131	CHM 4132	Chemical Principles 1, 2, 3	12
			(formerly General Chemistry,	
			CHM 4111, 4112, 4113)	
Major Cone	ombook on Ca	*****		
MLS 4301	centration Co	ourses.	M	
WILS 4301			Medical Laboratory Science	
MI C 1110			Orientation	2
MLS 1112 MLS 1212			Renal Physiology/Urinalysist	2
			Renal Physiology/Urinalysis Labt	1
MLS 1172 MLS 1123			Immunologyt	2
MLS 1123 MLS 1223			Hematology 1†	2
MLS 1223			Hematology 1 Labt	1
MLS 1124 MLS 1224			Hematology 2† Hematology 2 Lab†	2 1 2 2 1 2 1 3 1 3
MLS 1142			Microbiology 1†	2
MLS 1242			Microbiology 1 Labt	1
MLS 1132			Immunohematologyt	3
MLS 1232			Immunohematology Lab†	1
MLS 1144			Microbiology 2†	î
MLS 1244			Microbiology 2 Lab†	ī
MLS 1152			Clinical Chemistryt	4
MLS 1252			Clinical Chemistry Labt	1
MLS 1412			MLT Special Topics†	2 2
MLS 1423			MLT Hematology Applied Studyt	2
MLS 1432			MLT Immunohematology Applied	
			Studyt	2
MLS 1442			MLT Microbiology Applied	
3.07.04.000			Studyt	2
MLS 1452			MLT Clinical Chemistry	
1 4T O 4 400			Applied Study†	2
MLS 1480			MLT Seminar 1†	2

Electives

Computer science** or Liberal Arts electives as needed to complete total credit

Total Quarter Hours

87

*Challenge examinations are available for many of the major concentration courses. Those working in the field may want to investigate this option by speaking with the program director at 617-373-3664. †Tuition for this course is at a special rate. Call 617-373-3664 to register.

**Students who demonstrate computer literacy may be permitted to transfer out of this requirement. Interested students should contact the program director at 617-373-2818.

Nursing (Evening Section)

The College of Nursing's Bachelor of Science degree in Nursing, accredited by the National League for Nursing, is offered to Registered Nurses on a part-time curriculum schedule through University College. Individual counseling, assessment of prior learning experiences, planning for progression and flexible scheduling of course requirements are offered to facilitate educational advancement and achievement of personal and professional goals.

Admission Procedure

Admissions applications are available from the Health Professions and Science

Office, 266 Ryder Hall or by calling (617) 373-2818.

The following items are required for admission to this study option and should be forwarded to the Office of Academic and Student Affairs, University College, Northeastern University, 180 Ryder Hall, 360 Huntington Avenue, Boston, MA 02115:

Completed Nursing Program application

Official transcripts from basic nursing program

Official transcripts from all colleges attended (If college courses were completed while attending a diploma program, an individual transcript from that college must be included.)

Evidence of current licensure as a Registered Nurse

 Satisfactory performance on the NLN Mobility Profile II or ACT/PEP examinations.

Pre-admission and academic counseling are available by calling the Office of Academic and Student Affairs at 617-373-2400 or TTY 617-373-2825 for an appointment.

Prospective students may obtain a status report, detailing courses that are acceptable for transfer from other institutions as well as the remaining coursework to be completed by contacting the Office of Academic and Student Affairs, 617-373-2400 or TTY 617-373-2825.

Planning a Program of Study

Potential students are encouraged to attend group information sessions in order to increase their awareness of College of Nursing and University College policies. These sessions cover course requirements, promotional policies, advanced placement procedures, and the process of petitioning. To register for these sessions, call 617-373-2818.

Nursing (Evening Section) Bachelor of Science in Nursing (Major Code 809)



Core Cours	06			
ENG 4100	CS			rter hours
ENG 4111	ENG 4112		Critical Writing 1	4
BIO 4103	ENG 4112		Critical Writing 2, 3	6
BIO 4175	BIO 4176	BIO 4177	Biology 1	4
DIO 4173	DIO 4170	DIO 41//	Human Anatomy and	0
BIO 4190			Physiology 1, 2, 3	9
CHM 4130	CHM 4131	CHM 4132	Microbiology 1	3
CI IIVI 4150	CI IIVI 4151	CI IIVI 4152	Chemistry Principles 1, 2, 3	12
			(formerly General Chemistry,	
Computer (C	OM) course of	f vour choice	CHM 4111, 4112, 4113)	
MTH 4110	Owi, course of	your choice	Contemporary Algebra 1	4 3
NUR 4302			Pharmacodynamics	
or			or	(3)
HSC 4601			Advanced Pharmacology	(3)
PSY 4110			Introduction to Psychology:	(3)
101 1110			Fundamental Issues	3
PSY 4111			Introduction to Psychology:	3
101 1111			Developmental Aspects	3
PSY 4112			Introduction to Psychology:	3
101 4112			Personal Dynamics	3
PSY 4240			Development: Infancy	3
101 1210			and Childhood	3
PSY 4241			Development: Adolescence	3
PSY 4242			Development: Adulthood	3
101 1112			and Aging	3
SOA 4101			Cultural Anthropology:	3
0011 1101			Kinship Societies	3
SOA 4102			Cultural Anthropology:	Ü
			State Societies	3
SOC 4100			Roles, Culture, and the Individua	
SOC 4101			Inequality and Institutions	3
) Course of you	r choice		3
Major Conc	entration Co	urses*		
NUR 4300	11 G 11.		Nursing Transition	9
	inding Credit	given upon com	pletion of NUR 4300	22
NUR 4301			Psychiatric/Mental Health	_
NIIID 4400			Nursingt	7
NUR 4400			Maternal and Child Nursingt	9
NUR 4401			Medical Surgical Nursingt	9
NUR 4500			Community Health Nursing	9
NUR 4502			Introduction to Nursing Research	
NUR 4504			Contemporary Issues in Nursing	2
NUR 4505			Introduction to Leadership and	2
			Management in Patient Care	3
Electives				
Humanities				9
Open elective	s			14

Total Quarter Hours

178

*Students must submit a petition to enter *each* nursing course. Petitions must be submitted at least one full quarter in advance of registering. A current status petition must accompany each petition. Students petitioning to enter NUR 4300, Nursing Transition, must also obtain a health clearance from the Lane Health Center, present evidence of having had a tuberculin skin test within the previous twelve months, and present a Hepatitis vaccine statement.

†Challenge examinations are available for this course through the NLN Mobility Profile II Examination or the ACT PEP Examination. Successful completion of either set of exams is a component of the

Paramedic Technology

University College provides the opportunity to earn a certificate as well as an associate's degree in Paramedic Technology. Major concentration areas involve the EMT-Paramedic's roles, responsibilities and the subject areas required by Massachusetts Department of Public Health regulations and national guidelines. These areas include: medical terminology, patient assessment and initial management, airway and ventilation, pathophysiology of shock, general pharmacology, trauma and burns, respiratory system, cardiovascular system, endocrine emergencies, nervous system, acute abdomen, genitourinary and reproductive systems, anaphylaxis, toxicology, alcoholism and drug abuse, infectious diseases, environmental injuries, geriatrics, pediatrics, obstetrics, gynecological and neonatal emergencies, behavioral emergencies, EMS systems, medical/legal considerations, communications, rescue, major incident response, and stress management.

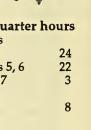
Admissions requirements: completion and submission of an application form; high school diploma or equivalent; national, state or provincial certification as an Emergency Medical Technician; official high school and college transcripts; entrance examination; Admissions Committee interview; and physical examina-

tion.

Students who successfully complete the Paramedic Technology Certificate courses may continue with the liberal arts and computer courses necessary for an Associate in Science in Paramedic Technology Degree.

Whether or not students continue on to the associate level, all those certified in Paramedic Technology may apply for and take the National Registry of Emergency Medical Technicians Paramedic Certification Examination.

Paramedic Technology Associate in Science Degree (Major Code 874)



Major Cond	entration/Ce	ertificate Courses	qua	arter hours
EMŚ 4117	EMS 4118	EMS 4119	Emergency Medical Services	
EMS 4120			1, 2, 3, 4	24
EMS 4121	EMS 4122		Emergency Medical Services 5	6,6 22
EMS 4123			Emergency Medical Service 7	3
BIO 4178	BIO 4179		Human Anatomy and	
			Physiology A and B	8
Liberal Arts	and Compu	iter Courses		
ENG 4100	_		Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
CMN 4101			Fundamentals of Human	
			Communication	3
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
PSY 4112			Introduction to Psychology:	
			Personal Dynamics	3
HST 4103			The Civilization of the	
			Modern World	3
LNS 4200			Spanish for the Medical	
			Professions	4
COM 4101			Foundations of Computer	
			Literacy	4
Electives				3
Electives				3
Total Quart	er Hours			96

Radiologic Technology

The Radiologic Technology program is a joint offering of the University and several area hospitals. Classroom experience is provided by the University, and the clinical practicum is conducted at an assigned affiliated hospital. The program is accredited by the Joint Review Committee for Education in Radiologic Technol-

ogy.

The Radiologic Technologist is a skilled professional employed in the diagnostic and therapeutic areas of the hospital, as well as in quality control and inspection. Students in the Radiography program get experience in all aspects of medical radiography and gain limited exposure to advanced imaging and therapeutic areas such as computerized tomography, magnetic resonance imaging, ultrasonography, nuclear medicine, and radiation therapy. Each of the three associate of science degree options allows graduates to continue into the bachelor of science degree programs in health science or health management through University College.

Entrance Criteria: Satisfactory completion of three years of high school math, one year of biology, and one year of chemistry or physics. Applicants should also submit a letter of recommendation from a science instructor. Alternatively, applicants may submit a letter from a current employer addressing the applicant's

potential to succeed in the program.

Candidates who meet the above requirements should file an application and supply all necessary documents by the appropriate deadlines. (See below.) No candidate will be considered until all documents and fees are received in the program office. Only admitted students are allowed to take Radiologic Technology (RAD) courses.

Associate in Science Degree Full-Time Day Program (806)

This associate in science degree program is a full-time day program. Graduates are eligible for certification by the American Registry of Radiologic Technologists as well as licensure as a Radiologic Technologist by the Commonwealth of Massachusetts. The full-time day curriculum is scheduled over twenty-seven months with early exit options available for students with transfer credit or students who wish to take an accelerated course sequence. Early exit provides graduates with the opportunity to enter the job market and/or begin work on their bachelor degree studies. The application deadline for the full-time day program is March 1.

Associate in Science Degree Part-Time Evening Program (811)

A part-time evening option exists for students unable to participate in the full-time day program. Required academic classes are scheduled during the evening over twenty-four consecutive months. All professional courses are offered at our Dedham campus. Following the academic courses, the student will complete the program requirements by participating in up to one year of full-time clinical experience in an assigned hospital setting. Class size is limited. The application deadline for the part-time program is <u>March 1</u>.

Part-Time Evening Program for Radiographers (810)

University College also offers an associate of science degree program for registered technologists; the program requires fewer major concentration courses. Candidates who wish to apply to this program must document satisfactory completion of an accredited certificate program in radiologic technology or be certified by the American Registry of Radiologic Technologists.

Radiologic Technology Associate in Science Degree (Major Codes 806/811)

190	Market Constitution	_
	21	
A S	- A	
U	-	

Core Cours	es		quarter	hours
BIO 4103			Biology 1	4
BIO 4175	BIO 4176	BIO 4177	Human Anatomy and	•
220 227			Physiology 1, 2, 3	9
COM 4101			Foundations of Computer Literacy	
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
HMG 4100			Managing Health Services	Ŭ
11110 1100			Organizations 1	3
MTH 4110	MTH 4111		Contemporary Algebra 1, 2	6
PSY 4110			Introduction to Psychology:	Ü
			Fundamental Issues	:3
2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3				
			nitted students allowed to take RAD)
courses; mu	st be passed	with a C or bette	er.)	
RAD 4100	RAD 4101		Radiologic Technology Orientation 1, 2	6
RAD 4102	RAD 4103		Radiologic Science 1, 2	8
RAD 4104	RAD 4105		Principles of Radiology 1, 2	8
RAD 4106	RAD 4107		Radiologic Photography and	
			Exposure 1, 2	8
RAD 4116	RAD 4117	RAD 4118	Radiology Practicum	
RAD 4119			1, 2, 3, 4	16
RAD 4121	RAD 4122		Radiographic Lab 1, 2	2
RAD 4304			Cross-Sectional Anatomy	4
RAD 4305			Advanced Radiologic Technology	4
RAD 4306			Radiation Protection—Radiobiology	4
Tatal Oward				
Total Quart	er mours			99

Part-Time Associate in Science Degree Program for Radiographers (Major Code 810)



Core Courses	. quarter	hours
Transfer credit for completion of prerequisite*		50
BIO 4103	Biology 1	4
COM 4101	Foundations of Computer Literacy	4
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
HMG 4100	Managing Health Services	
	Organizations 1	3
MTH 4110 MTH 4111	Contemporary Algebra 1, 2	6
PSY 4110	Introduction to Psychology:	
•	Fundamental Issues	(3)
or	or	
SOC 4100	Roles, Culture, and the Individual	(3)
PSY 4111	Introduction to Psychology:	
	Developmental Aspects	(3)
or	or	
SOC 4101	Inequality and Institutions	(3)
Major Concentration Courses		
RAD 4304	Cross-Sectional Anatomy	4
RAD 4305	Advanced Radiologic Technology	
RAD 4306	Radiation Protection—Radiobiology	3
RAD 4460	Medical Imaging Quality Assurance	4 3 3
	incurrent integrity Quality Tissurance	_
Total Quarter Hours		97

*Prerequisite: Satisfactory completion of a certificate program in radiologic technology or registration by the American Registry of Radiologic Technologists.

Liberal Arts Degree Programs

Rose A. Doherty, Assistant Dean, Director, Liberal Arts Programs 266 Ryder Hall 617-373-2416, 373-2423

Nancy Bandoian, Assistant to the Director, Liberal Arts Programs

Program Consultants and Advisors

ART: Arts and Graphics

Consultant: Prof. Peter Serenyi, Chair,

Dept. of Art and Architecture

(College of Arts and Sciences) (617-373-2347)

Associate Consultant and Program Advisor:

Daniel Vardaro (617-373-2416)

ASL: American Sign Language

Consultant/Program Advisor:

Prof. Marina L. McIntire, Director

ASL Program (College of Arts and Sciences)

(617-373-3064/TTY 617-373-3067)

CMN: Communication Studies

Consultant/Program Advisor:

Prof. Michael Woodnick,

Communication Studies Dept. (College of Arts and Sciences) (617-373-5517)

DRA: Drama

Consultant: Prof. Mort S. Kaplan,

Theatre and Dance Dept.

(College of Arts and Sciences) (617-373-2416)

ECN: Economics

Consultant: Prof. John Adams, Chair,

Economics Dept.

(College of Arts and Sciences) (617-373-2872)

Associate Consultant/Program Advisor:

Dr. Herbert J. Eskot (617-373-2416)

ENG: English (Literature or Writing) Consultant: Prof. M. X. Lesser,

English Dept.

(College of Arts and Sciences) (617-373-2416)

Associate Consultant, Business Writing:

Rosemarie Dittmer (617-373-2416)

HST: History

Consultant: Prof. Raymond H. Robinson,

History Dept. (College of Arts and Sciences)

Associate Consultant/Program Advisor:

Prof. Gerald H. Herman, History Dept.

(College of Arts and Sciences) (617-373-2660)

JRN: Journalism, Public Relations, and Advertising

Consultant/Program Advisor:

Prof. LaRue W. Gilleland

(617-373-2416)

LN: Modern Languages

Consultant: Prof. Holbrook Robinson,

Chair, Modern Languages Dept.

(College of Arts and Sciences) (617-373-2234)

Modern Languages includes the following:

LNF: French

LNJ: Japanese

LNG: German

LNN: Swedish

LNI: Italian

LNR: Russian LNS: Spanish

MUS: Music

Consultant: Prof. Joshua R. Jacobson,

Music Dept. (College of Arts and Sciences)

Associate Consultant/Program Advisor:

Marjorie Atlas, Music Dept.

(College of Arts and Sciences) (617-373-2440)

PHL: Philosophy and Religion

Consultant: Prof. Susan Setta,

Chair, Philosophy Dept.

(College of Arts and Sciences) (617-373-3636)

POL: Political Science

Consultant: Prof. L. Gerald Bursey,

Political Science Dept.

(College of Arts and Sciences) (617-373-2796)

PSY: Psychology

Consultant/Program Advisor:

Prof. Charles Karis, Psychology Dept.

(College of Arts and Sciences)

Associate Consultant:

Prof. Harold Zamansky, Psychology Dept.

(College of Arts and Sciences) (617-373-3076)

SOA: Sociology-Anthropology and

SOC: Sociology

Consultant: Prof. Christine Gailey,

Sociology Dept. (College of Arts and Sciences)

(617-373-2686)

TCC: Technical Communications

Consultant/Program Advisor:

Neil F. Duane (President, Boston

Documentation Design) (617-380-0740)

Purpose

Through the liberal arts curricula offered by University College, students are guided in their independent and creative discovery of ideas and methods in the

areas of humanities, natural sciences, and social sciences.

University College believes that a liberal arts education enables students to make more intelligent and realistic appraisals of self and career. The Liberal Arts Programs at the college present students with both a challenge to bring meaning and focus to the educational experience and an opportunity to acquire marketable knowledge and skills.

Programs

University College offers bachelor of arts and bachelor of science degrees in art, economics, English, history, political science, psychology, and sociology-anthropology. Unlike the bachelor of science degree, the bachelor of arts degree includes a language requirement. Bachelor of science degrees are offered in graphic design and visual communication, in technical communications, and in the popular combined program, Liberal Arts/Business Minor. In addition, degree programs in English, political science, and sociology-anthropology present professional concentrations designed to teach specialized skills.

Liberal Arts bachelor's degree candidates are permitted to accumulate up to 44 quarter hours of credit (25 percent of the credits toward a bachelor's degree) in

business subjects.

Bachelor's Degree in Liberal Studies

University College offers a bachelor of arts degree in liberal studies designed to help students develop communication, analytical, and research skills while exploring the great ideas of the ages as well as contemporary issues. The program's courses are grouped in four areas:

Communication and Critical Thinking

• Cultural Heritage

Science, Research, and Quantitative Methods

Contemporary Studies.

The courses in each area are selected to provide students with a breadth of

disciplinary perspectives.

Forty-five quarter hours of elective credits are permitted to allow students to take a certificate program or select individual courses in accordance with their personal and career interests.

Upon approaching completion of individual coursework in Cultural Heritage and Contemporary Studies, students take an interdisciplinary seminar in each area to

integrate their learning experiences.

Associate in Science Degree

An associate in science degree program in arts and sciences is offered for those who want a general background in liberal arts, but do not want to pursue a major field of concentration for the bachelor's degree. Students who do wish to go on to a bachelor's degree should check with an academic advisor to be sure that the courses they select for the A.S. degree will fit into their chosen bachelor's program.

Minor in Business Administration

The Minor in Business Administration will be available to all nonbusiness students at University College if they meet the following standards: 80 earned quarter hours, 2.0 qpa, and completion of all background courses. Nonbusiness students may find the minor attractive if they are considering a career in business or pursuing an MBA. The minor consists of 10 required courses, 4 background courses, and 2 electives. Students who wish to enter the program should speak with an advisor in the Office of Academic and Student Affairs upon successfully meeting the standards listed above. Students who complete all 12 required courses successfully and have earned at least a C (2.0) average in them will be awarded a minor in Business Administration at graduation.

Background courses:

ECN 4115	ECN 4116	Economic Principles and Problems 1, 2
MTH 4110	MTH 4111	Contemporary Álgebra 1, 2

Required courses:

MGT 4101 ACC 4101	MGT 4102 ACC 4102	Introduction to Business and Management 1, 2 Accounting Principles 1, 2
HRM 4301	HRM 4302	Organizational Behavior 1, 2
FI 4301	FI 4302	Principles of Finance and
MKT 4301	MKT 4302	Financial Management Introduction to Marketing 1, 2

Electives:

Selection of one of the following four sets of courses (depending on student interest):

1.	MGT 4450	MGT 4451	Business Policy 1*, 2
2.	MGT 4340	MGT 4341	Small Business 1, 2
3.	MGT 4446		International Business Management
			and Operations**
	MGT 4455		Manager and Society**
4.	OM 4404		Service Operations Management**
	MGT 4410		Project Management Process: Planning
			and Implementation**

^{*}Must have 130 q.h. to register.

^{**}Must have 80 q.h. to register.

Certificate Programs

Students who seek specialized skills to advance their careers may choose from the following liberal arts certificate programs, which they may take independently or in conjunction with degree study:

Acting 40Advertising

 American Sign Language and Deaf Studies 41

 American Sign Language-English Interpreting 60

• Business Communication 42

Communication Studies 43

41

Computer Graphic Design 44

• Electronic Composition 47

 Graphic Design and Visual Communication 49

• Public Relations 54

Technical Writing 56

Writing 57

Special Studies

University College offers a variety of Special Studies. These courses give students an opportunity to earn credits in Advanced Tutorials, Independent Studies, Honors Programs, Field Work, and Internships (Journalism and Graphic Arts). Consult descriptions on page 24-25.

Assessment of Prior Learning Program (APL)

Some students may petition for prior learning or life experience credit, in specified liberal arts, health, and business subjects. See page 28 for details. Credit cannot be awarded through APL when an appropriate examination is available through CLEP or PEP.

Degrees

Arts and Sciences Associate in Science Degree (Major Code 372)



87

Core Courses quarter hours **ENG 4100** Critical Writing 1 **ENG 4111 ENG 4112** 6 Critical Writing 2, 3 **Major Concentration Courses** Humanities (AFR 4151, ART, ASL, CMN, DRA, ENG, JRN, LN, MUS, PHL, TCC) 24 Math-Science (BIO, CHM, ESC, MTH, PHY) 18 Social Sciences (AFR 4131, AFR 4132, AFR 4193, ECN, HST, POL, PSY, SOA, SOC) 24 11

Electives*

*Recommended: CD 4110 Managing Career Decisions and INT 4200 Workshop in Creativity.

Total Quarter Hours

Economics Bachelor of Arts Degree (Major Code 390)

				The state of the s
Math-Science	ENG 4112 MTH 4111 Jage AFR 4151, ART (BIO, CHM, E	SC, MTH, PHY)	Critical Writing 1 Critical Writing 2, 3 Contemporary Algebra 1, 2 Conversational Intermediate A, ENG, JRN, LN, MUS, PHL, TCC)	12
Social Sciences	(AFR 4131, A	AFR 4132, AFR 419	3, HST, POL, PSY, SOA, SOC)	18
Major Conce ECN 4115 ECN 4137 ECN 4215 ECN 4216 ECN 4250	ECN 4116 ECN 4217 ECN 4218 ECN 4251		Economic Principles & Problems History of Economic Thought Macroeconomic Theory 1, 2 Microeconomic Theory 1, 2 Statistics 1, 2, 3	1, 2, 3 9 3 6 6 9
Economics Open electives	*			24 23
Total Quarte *Recommended		naging Career Deci	sions and INT 4200 Workshop in Cred	174 utivity .

Economics Bachelor of Science Degree with Certificate in Finance (Major Code 390)

*Up to 20 q.h. allowed in business subjects.



				Y
Core Course	es		qua	rter hours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
MTH 4110			Contemporary Algebra 1, 2	6
Social Science	s (AFR 4131, A	AFR 4132, AFR 419	3, HST, PÔL, PŚY, SŎA, SOC)	12
Major Conc	entration Co	urses		
ECN 4115	ECN 4116	ECN 4117	Economic Principles & Problem	ns 1, 2, 3 9
ECN 4137	LCIVIII0	LCIVIII/	History of Economic Thought	3
ECN 4215	ECN 4217		Macroeconomic Theory 1, 2	6
ECN 4216	ECN 4218		Microeconomic Theory 1, 2	6
ECN 4250	ECN 4251	ECN 4252	Statistics 1, 2, 3	9
Finance Cer	tificate Cour	ses		
ACC 4101	ACC 4102	ACC 4103	Accounting Principles 1, 2, 3	9
FI 4301			Principles of Finance	3 3 3 3
FI 4302			Financial Management	3
FI 4310			Investment Principles	3
FI 4320			Credit Principles	3
FI 4325			Budgeting and Planning	3
Electives				
Economics				24
Liberal Arts				42
Open elective	c* +			23
open elective	3			
Total Quarte	er Hours			174

†Recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity.

English Bachelor of Arts Degree (Major Code 330)

Core Courses		r hour
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
Modern Language	Conversational	12
	Intermediate	12
Math-Science (BIO, CHM, ESC, MTH, PHY)		18
Social Sciences (AFR 4131, AFR 4132, AFR 41	193, ECN, HST, POL, PSY, SOA, SOC)	24
Major Concentration Courses		
ENG 4120	English Literature: Faith and	
	Humanism	3
ENG 4121	English Literature: Reason and	
	Romanticism	3
ENG 4122	English Literature: Victorians	
	and Moderns	3
ENG 4123	Early American Literature:	
W. T. G. 146.4	Faith, Reason, and Nature	3
ENG 4124	American Romantics and	
ENIO 410E	American Realists	3
ENG 4125	American Literature:	_
ENIC 4101	The Modern Temper	3
ENG 4131	God, Gods, and Heroes:	
	The Literature of the Ancient and Medieval Worlds	3
ENG 4132		3
ENG 4132	Man, Reason, and Imagination: Literature from the Renaissance	
	to the Romantic Age	3
ENG 4133	Order and Disorder:	3
E14G 4155	Literature of the Moderns	3
ENG 4349 ENG 4350	Expository and Persuasive	3
E11G 4047 E11G 4000	Writing 1, 2	6
ENG 4352	Expository Communications	3
ENG 4604	Major Figure in Literature*	6
ENG 4658	Shakespeare the Dramatist	(3)
or	or	(/
ENG 4659	Shakespeare: The Major	
	Tragedies and Comedies	(3)
or	or	` '
ENG 4660	Shakespeare on Film	(3)
	•	` '
Choose one of two concentrations for twenty-seve	en quarter hours:	
I. Literature		
Select nine courses from the ENG 4200 or EN	IG 4600 series in the	
course descriptions on pages 190-193.		(27)
II. Writing		
Choose six courses from the ENG 4300 or EN		(0.57)
ENG 4243; and three courses from either the	JRN or TCC courses.	(27)
Floatings	,	à
Electives		0
English (ENG 4200 and up)		9
Open electives**		17
Total Quarter Hours		174
Total Quarter Hours	ant firmer cook time	1/4
*Course must be taken twice, focusing on a differe **Recommended: INT 4200 Workshop in Creativity	and CD 4100 Managing Career Designer	
Recommended. 1141 4200 Workshop in Creations	and CD 4100 Manusing Cureer Decisions.	

English Bachelor of Science Degree (Major Code 330)

		1
Core Courses	quart	er hours
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
Math-Science (BIO, CHM, ESC, MTH, PHY)	0 ,	18
Social Sciences (AFR 4131, AFR 4132, AFR 4	193, ECN, HST, POL, PSY, SOA, SOC)	24
, , , , , , , , , , , , , , , , , , , ,	, =,,,,,,	
Major Concentration Courses		
ENG 4120	English Literature: Faith and	
	Humanism	3
ENG 4121	English Literature: Reason and	3
2110 1121	Romanticism	3
ENG 4122	English Literature: Victorians and	3
	Moderns	3
ENG 4123	Early American Literature:	3
2110 1120	Faith, Reason, and Nature	3
ENG 4124	American Romantics and	3
2110 1121	American Realists	3
ENG 4125	American Literature:	3
1110	The Modern Temper	3
ENG 4131	God, Gods, and Heroes:	3
Litto IIoi	The Literature of the	
	Ancient and Medieval Worlds	3
ENG 4132	Man, Reason, and Imagination:	J
11.10 1102	Literature from the Renaissance	
	to the Romantic Age	3
ENG 4133	Order and Disorder:	3
E140 4155	Literature of the Moderns	3
ENG 4349 ENG 4350	Expository and Persuasive Writing	
ENG 4352	Expository Communications	3
ENG 4604	Major Figure in Literature*	6
ENG 4658	Shakespeare the Dramatist	(3)
or	or	(0)
ENG 4659	Shakespeare: The Major	
LIVG 1037	Tragedies and Comedies	(3)
or	or	(3)
ENG 4660	Shakespeare on Film	(3)
L11G 4000	Shakespeare on Film	(5)
Choose one of two concentrations for twenty-seve	on anartor hours	
I. Literature	en quarter nours.	
Choose nine courses from the ENG 4200 or E	INC 1600 series in the course descripti	one
on pages 190-193.	1143 4000 series in the course descripti	
on pages 190-193.		(27)
II. Writing		
Select six courses from the ENG 4300 or ENC	2 4500 series or ENC 4242	
ENG 4243; and three courses from either the		(27)
LIAO 4240, and three courses from either the	jidy of 100 courses.	(21)
Electives		
English (ENG 4200 and up)		9
		41
Open electives**		41
Total Ouarton Hours		174
Total Quarter Hours	A.C	1/4

^{*}Course must be taken twice, focusing on a different figure each time.

^{**}Recommended: INT 4200 Workshop in Creativity and CD 4100 Managing Career Decisions or the Minor in Business Administration (see page 129).

Fine Arts Bachelor of Arts Degree (Major Code 327)

Core Courses	quarter	hours
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
Modern Language	Conversational	12
	Intermediate	12
Math-Science (BIO, CHM, ESC, MTH, PHY)		18
Social Sciences (AFR 4131, AFR 4132, AFR 419	3, ECN, HST, POL, PSY, SOA, SOC)	24

Maj	or	Concent	trati	on	Courses
ART	410	nn			

Major Concentration Courses	
ARŤ 4100	History of Art to the Fourth Century 3
ART 4101	History of Art to the Sixteenth Century 3
ART 4102	History of Art to the Twentieth Century3
ART 4106	Introduction to Art 3
ART 4112	Visual Foundations* 3
was	

Electives

36
47

Total Quarter Hours

*3 1/2-hour studio. **Up to 44 q.h. allowed in business subjects.

†Recommended: INT 4200 Workshop in Creativity and CD 4100 Managing Career Decisions or the Minor in Business Administration (see page 129).

174

Fine Arts Bachelor of Science Degree (Major Code 327)

Core Courses	quarter hour
ENG 4100 Critical Writing 1	4
ENG 4111 ENG 4112 Critical Writing 2, 3	6
Math-Science (BIO, CHM, ESC, MTH, PHY)	18
Social Sciences (AFR 4131, AFR 4132, AFR 4193, ECN, HST, POL, PSY, SOA	, SOC) 24

Major Concentration Courses	
ARŤ 4100	History of Art to the Fourth Century 3
ART 4101	History of Art to the Sixteenth Century 3
ART 4102	History of Art to the Twentieth Century3
ART 4106	Introduction to Art 3
ART 4112	Visual Foundations* 3

Art Open electives**†	36 71
Total Quarter Hours	174

*3 1/2-hour studio.

**Up to 44 q.h. allowed in business subjects.

†Recommended: INT 4200 Workshop in Creativity and CD 4100 Managing Career Decisions the Minor in Business Administration (see page 129).

Graphic Design and Visual Communication Associate in Science Degree (Major Code 362)

	· · · · · · · · · · · · · · · · · · ·	
Core Courses	quarter	hour
Communication		
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
CMN 4101	Fundamentals of Human	0
CIVILA 4101	_	•
DIII 4100	Communication	3
PHL 4100	Philosophical Thinking	3
Social Sciences		
HST 4101	The Civilization of the Ancient	
	and Medieval Worlds	3
One history course from the following:		
(HST 4102, 4103, 4201, 4202, 4203, 4600 to 4646)		3
SOC 4100	Roles, Culture, and the Individual	3
One Sociology course from SOC 4101 to 4276.	Roles, Culture, and the marvidual	3
One sociology course from SOC 4101 to 4270.		3
B :		
Business		
MGT 4101	Introduction to Business and	
	Management 1	3
MKT 4301	Introduction to Marketing 1	3
ACC 4101	Accounting Principles 1	3
	The state of the s	,
Major Concentration Courses		
Major Concentration Courses		
Art/Graphics		
ART 4105	Art through the Ages	3
ART 4110	Modern Art	3
ART 4112	Visual Foundations*	3
ART 4121	Principles of Drawing and	
	Composition*	3
ART 4175	History of Graphic Design	3
74KT 4175	Thistory of Grapine Design	
Crambia Dasian and Visual Communicat	ion Contificato	
Graphic Design and Visual Communicat		_
ART 4135	Design Fundamentals*	3
ART 4139	Color Theory and Practice*	3
ART 4140	Graphic Communication and	
	Production	3
ART 4141 ART 4142	Graphic Design 1*, 2*	6
ART 4143	Advertising Design*	3
ART 4151	Typography	3
ART 4181	Introduction to Computer Graphics*	3
ART 4367		9
AKI 430/	Pictorial Imagery for the	2
A D.T. 4054	Graphic Designer*	3
ART 4251	Portfolio Development*	3
		_
Open Electives**		5
Total Ouarter Hours		87

*3 1/2-hour studio.

^{**}Recommended: INT 4200 Workshop in Creativity and CD 4100 Managing Career Decisions and ART 4910 Internship in Graphic Arts.

Graphic Design and Visual Communication Bachelor of Science Degree (Major Code 360)

Core Courses



quarter hours

3

3

3

27

175-177

Credits from associate in science degree in graphic design and visual communication 87 **Business Communication and Research ENG 4381** 6 ENG 4380 Writing for the Professions 1, 2 CMN 4251 Business and Professional Speaking 3 **ECN 4115** 3 Economic Principles and Problems 1 MGT 4330 Essentials for Managers of 3 Small Businesses Computer, Math, Science COM 4101 Foundations of Computer Literacy MTH 4110 MTH 4112 MTH 4111 9 Contemporary Algebra 1, 2, 3 Choose one of the following pairs: BIO 4103 **BIO 4104** Biology 1, 2 (8)or CHM 4130 **CHM 4131** Chemical Principles 1, 2 (8)ESC 4103 Introduction to the Earth Sciences: The Solid Earth (3)ESC 4104 Introduction to the Earth Sciences: Earth's Oceans and Atmosphere (3)PHY 4101 PHY 4102 College Physics 1, 2** (8)**Major Concentration Courses** 3 **ART 4160** Basic Photography* **ART 4176** International Directions in Graphic Design 3 **ART 4183** 3 Electronic Publishing Systems* **ART 4184** Presentation Graphics* 3 **ART 4185** Creative Imaging: Custom

Electives**

Total Quarter Hours

*3 1/2-hour studio or lab.

**Physics and additional courses in humanities are recommended, as well as INT 4200 Workshop in Creativity and CD 4100 Managing Career Decisions, and ART 4910 Internship in Graphic Arts.

Computer Design*

Advanced Raster Graphics*

Promotional and Technical

Advanced Computer Illustration*

Publications: Design and Production* 3

Computer Graphics Design Portfolio*

ART 4187

ART 4188

ART 4366

ART 4186

History Bachelor of Arts Degree (Major Code 323)

Core Courses	quarter	houre
ENG 4100	Critical Writing 1	
		4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
Modern Language	Conversational	12
	Intermediate	12
Humanities (AFR 4151, ART, ASL, CMN, DRA	LENG, IRN, LN, MUS, PHL, TCC)	24
Math-Science (BIO, CHM, ESC, MTH, PHY)	-, (-, , (18
Social Sciences (in three of the following areas:	ECNI DOL DEV COA COC	
Social Sciences (in three of the following areas:	ECN, POL, PS1, SOA, SOC)	18
Major Concentration Courses		
Introductory Courses		
HST 4101	The Civilization of the Ancient	
1151 4101		2
7.70M 44.00	and Medieval Worlds	3
HST 4102	The Civilization of the Early	
	Modern World	3
HST 4103	The Civilization of the	
	Modern World	3
LICT 4201		
HST 4201	American History 1763-1848	3
HST 4202	American History 1848-1917	3
HST 4203	American History Since 1917	3
	·	
Historical Skill Requirement		
HST 4241	The Historian's Craft	2
		3
HST 4265	Introduction to Public History	3
Regional Distribution		
Choose one course from each of the following three	regional groupings:	
European: any course with a HST 44 prefix	1-24-1111 21-11112	3
		3
American: any course with a HST 45 prefix		
Other: any course with a HST 46 prefix		3
Thematic Distribution		
Choose four courses from one of the following grou	ins A.F. or choose Group F.	
Group A: America's Ethnic Roots (HST 4404,		44.00
4501, 4543, 4544, 4602, 4604, 4611, 4632, 4	:636)	(12)
Group B: America's Social and Economic Hist	ory (HST 4530, 4532, 4533, 4534,	
4535, 4536, 4537, 4540, 4542, 4544, 4546, 4		(12)
Group C: Contemporary History (HST 4424, 4	425 4460 4468 4470 4513 4532 4533	
4534, 4535, 4536, 4537, 4549, 4602, 4603, 4	(11 1600, 1400, 1470, 1515, 1502, 1505,	
	011, 4022, 4023, 4024, 4043,	(10)
4644, 4645, 4646)		(12)
Group D: Technological History (HST 4270, 43	301, 4302, 4303, 4304, 4535,	
4536, 4537, 4643)		(12)
Group E: Women and Family History (HST 44	134, 4435, 4540, 4542, 4640)	(12)
Group F: Honors (HST 4811, 4812, 4813)		(12)
Group 1. 11011015 (1101 1011, 1012, 1010)		(1-)
T1 41 4		0.5
Electives*		35
Total Quarter Hours		174
4D 1 1 CD 4100 14 1 C D 11	TAIT 4000 Manual of Constitution and	. 16

*Recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity, or the Minor

in Business Administration (see page 129).

History Bachelor of Science Degree (Major Code 323)

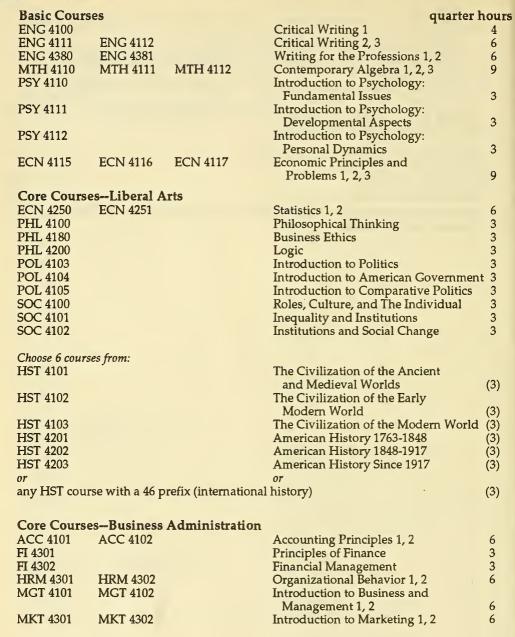
Core Course	28	quarter l	ours
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
MIS 4101	MIS-4102	Introduction to Data Processing and	Ŭ
WHO TIOI	1410-1102	Information Systems 1, 2	6
COC 4221	SOC 4332 SOC 4333		
SOC 4331		Social Research Methods 1, 2, 3	9
Humanities (AFR 4151, ARI, ASL, CMN, DRA	A, ENG, JRN, LN, MUS, PHL, TCC)	24
Social Scien	ices		
	oups (three courses in each group) fr	om the following.	
	ECN 4116 ECN 4117		
ECN 4115	ECN 4110 ECN 4117	Economic Principles and	(0)
		Problems 1, 2, 3	(9)
or		or	
POL 4103		Introduction to Politics	(3)
POL 4104		Introduction to American Government	t (3)
POL 4105		Introduction to Comparative Politics	(3)
or		or	
PSY 4110		Introduction to Psychology:	
		Fundamental Issues	(3)
PSY 4111		Introduction to Psychology:	(0)
101 1111		Developmental Aspects	(3)
PSY 4112			(3)
F31 4112		Introduction to Psychology:	(2)
		Personal Dynamics	(3)
or		or	(0)
SOA 4100		Physical Anthropology	(3)
SOA 4101		Cultural Anthropology:	
		Kinship Societies	(3)
SOA 4102		Cultural Anthropology: State Societies	(3)
or		or	
SOC 4100		Roles, Culture, and the Individual	(3)
SOC 4101		Inequality and Institutions	(3)
SOC 4102		Institutions and Social Change	(3)
		0	` ,
	entration Courses		
Introductory	Courses		
HST 4101		The Civilization of the Ancient	
		and Medieval Worlds	3
HST 4102		The Civilization of the Early	
		Modern World	3
HST 4103		The Civilization of the Modern World	3
HST 4201		American History 1764-1848	3
HST 4202		American History 1848-1917	3
HST 4203			3
1131 4203		American History Since 1917	3
Historical SI	kill Requirement		
HST 4241	•	The Historian's Craft	3
HST 4263		Oral History	3
HST 4265		Introduction to Public History	3
HST 4821		Field Work in History	
1101 4021		(or related APL credit)	6
		(or related At L credit)	U
Regional Di	stribution		
	rse from each of the following region	al groupings:	
	y course with a HST 44 prefix	0	3
	y course with a HST 45 prefix		3
	urse with a HST 46 prefix		3
Juici. airy Co	and with a rior to prent		



Thematic Distribution	
Choose four courses from one of the following groups A-E, or choose Group F:	
Group A: America's Ethnic Roots (HST 4404, 4434, 4435, 4455, 4466, 4501, 4543,	
4544, 4602, 4604, 4611, 4632, 4636)	(12)
Group B: America's Social and Economic History (HST 4530, 4532, 4533, 4534, 4535,	
4536, 4537, 4540, 4542, 4544, 4546, 4547, 4548)	(12)
Group C: Contemporary History (HST 4424, 4425, 4460, 4468, 4470, 4513, 4532,	
4533, 4534, 4535, 4536, 4537, 4549, 4602, 4603, 4611, 4622, 4623, 4624, 4643,	
4644, 4645, 4646)	(12)
Group D: Technological History (HST 4270, 4301, 4302, 4303, 4304, 4535, 4536,	
4537, 4643)	(12)
Group E: Women and Family History (HST 4434, 4435, 4540, 4542, 4640)	(12)
Group F: Honors (HST 4811, 4812, 4813)	(12)
Electives (preferably other than history)*†	53
m . 10	
Total Quarter Hours	174
*Up to 44 a.h. allowed in business subjects.	

tRecommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity, or the Minor in Business Administration (see page 129).

Liberal Arts/Business Minor Bachelor of Science Degree (Major Code 373)





Business Electives: Select one of the following four sets of courses

1. MGT 4450 MGT 4451 2. MGT 4340 MGT 4341 3. MGT 4446 MGT 4455 4. OM 4404 MGT 4410	Business Policy 1, 2*** Small Business 1, 2 International Business Operations** Manager Society** Service Operations Management ** Project Management Process: Planning and Implementation**	(6) (6) (3) (3) (3) (3)
Electives Fine Arts: Art, Music, or Drama Literature/Writing: Select 2 courses fr (course descriptions, pp. 190-193) Non-business electives*	om the ENG 4200, 4300, or 4600 series	6 6 32
*Recommended: INT 4200 Workshop in Cree **Requires 80 q.h. of credit.	ativity and CD 4100 Managing Career Decisions.	174

Liberal Studies Bachelor of Arts Degree (Major Code 495)

Core Courses	quarter h	loui
Communication and Critical Thinking	-	
ENG 4100	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
INT 4200	Workshop in Creativity	3
PHL 4100	Philosophical Thinking	3
PHL 4105	Philosophy of Knowing and Reality	3
PHL 4200	Logic	3
CMN 4101	Fundamentals of Human	
	Communication	3
CMN 4102	Group Discussion	3
ENG 4380	Writing for the Professions 1	3
L14G 4500	Withing for the Professions 1	9
Cultural Heritage		
ART 4105	Art through the Ages	3
ECN 4137	History of Economic Thought	3
ENG 4131	God, Gods, and Heroes: Literature of	
	the Ancient and Medieval Worlds	3
ENG 4132	Man, Reason, and Imagination:	_
	Literature from the Renaissance	
	to the Romantic Age	3
ENG 4133	Order and Disorder:	Ŭ
2110 1100	Literature of the Moderns	3
HST 4101	The Civilization of the Ancient	3
1151 4101	and Medieval Worlds	3
HST 4102	The Civilization of the Early	9
1131 4102	Modern World	3
HST 4103	The Civilization of the Modern World	3
INT 4203		3
1111 4203	Independent Study in Cultural	3
MIIC 4120	Heritage	
MUS 4120	Music Appreciation: The Masterworks	_
	of Western Civilization	3
POL 4110	The Great Political Thinkers	3
Science, Research, and Quantitative M	lethods	
CHM 4105	Chemistry and the Environment	3
ECN 4250 ECN 4251	Statistics 1, 2	6
ENG 4381	Writing for the Professions 2	3
MIS 4101 MIS 4102	Introduction to Data Processing and	
	Information Systems 1, 2	6
MTH 4110 MTH 4111 MTH 4112	Contemporary Algebra 1, 2, 3	9
Science (BIO, CHM, ESC, PHY)		6-8
Science (DIS, CIIIVI, ESC, IIIII)		0 0
Contemporary Studies		
ECN 4115 ECN 4116	Economic Principles and Problems 1, 2	6
ECN 4334	Comparative Economic Systems	3
INT 4204	Independent Study in	
	Contemporary Studies	3
POL 4105	Introduction to Comparative Politics	3
PSY 4110	Introduction to Psychology:	
	Fundamental Issues	3
Psychology (any PSY course)		3
SOA 4155	Individual and Culture	3
SOC 4100	Roles, Culture, and the Individual	3
Sociology (any two SOC courses)		6



Electives*†

44

Electives may be used

• to take a University College certificate program

to study a modern language or other area in greater depth

to study areas of personal or career interest

• to complete a Minor in Business Administration (see page 129).

Students are encouraged to make an appointment with a University College counselor for help in selecting electives. Call 617-373-2400 or TTY 617-373-2825 for an appointment.

Total Quarter Hours

174

*Up to 44 q.h. allowed in business subjects.

†Recommended: CD 4100 Managing Career Decisions (see page 170 for course description).

Political Science Bachelor of Arts Degree (Major Code 322)

		W
Core Courses	quarter hou	ırs
ENG 4100		
	Critical Writing 1	4
ENG 4111 ENG 4112	Critical Writing 2, 3	6
Modern Language	Conversational	12
	Intermediate	12
Humanities (AFR 4151, ART, ASL, CMN, DRA		24
	i, ENG, JKN, LN, MOS, FILL, ICC)	
Math-Science (BIO, CHM, ESC, MTH, PHY)		18
Social Sciences (in three of the following areas	: ECN, HST, PSY, SOA, SOC)	18
Major Concentration Courses		
POL 4103	Introduction to Politics	3
POL 4104	Introduction to American Government	3
POL 4105	Introduction to Comparative Politics	3
POL 4331	International Relations	3
POL 4370	Introduction to Political Theory	3
American Government		
Choose three of the following:		
POL 4310	American Political Thought	(2)
		(3)
POL 4313		(3)
POL 4314	Urban and Metropolitan Government	(3)
POL 4318	The American Presidency	(3)
POL 4319		(3)
POL 4320		
		(3)
POL 4321	Civil Liberties	(3)
POL 4322	Criminal and Civil Due Process	(3)
0 " 0 "		
Comparative Government		
Choose two of the following:		
POL 4330	Comparative Politics	(3)
POL 4338		(3)
POL 4339	Government and Politics of Russia	(3)
POL 4342		(3)
POL 4350	Politics and Policies of the	
	Developing Nations	(3)
POL 4352	Government and Politics of	(-)
1 01 1052		(2)
DOL 1051		(3)
POL 4356	Government and Politics of	
	Northern Africa	(3)
POL 4357	Government and Politics of	
		(3)
POL 4359	Government and Politics in the	(5)
FOL 4009		
		(3)
POL 4362	Government and Politics of	
	Southeast Asia	(3)
POL 4365	Government and Politics of China	(3)
POL 4367	Government and Politics of Japan	(3) (3)
1 OL 4507	Government and Fondes of Japan	(3)
International Relations		
Choose one of the following:		/
POL 4332	International Organization	(3)
POL 4333	International Law	(3)
POL 4335	Formulating American Foreign Policy	(3)
POL 4336	American Foreign Policy	(3) (3) (3) (3)
POL 4341	Pussian Equipm Dali	(2)
	Russian Foreign Policy	(3)
POL 4364	China's Foreign Policy	(3)

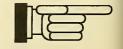


Theory and Methodology Choose one of the following: POL 4311	Research Methods	(3)
POL 4371	Modern Political Theory	(3)
Electives Political science Open electives*		18 26
Total Quarter Hours *Recommended: CD 4100 Managing Career D	Decisions and INT 4200 Workshop in Creativity.	174

Political Science Bachelor of Science Degree (Major Code 322)



Core Course	es	quarter hou	ırs
ENG 4100		Critical Writing 1	4
ENG 4111	ENG 4112	Critical Writing 2, 3	6
ECN 4250	ECN 4251	Statistics 1, 2	6
MIS 4101	MIS 4102	Introduction to Data Processing and	
		Information Systems 1, 2	6
Humanities (AFR 4151 ART ASI, CMN DRA	A, ENG, JRN, LN, MUS, PHL, TCC)	12
	es (in three of the following areas		18
Choose one of t		. 101,101,101,001,000	10
MIS 4221	ne jonowing.	COBOL Programming 1	(3)
MIS 4241		Programming in BASIC 1	(3)
MIS 4241		C Programming 1	(3)
NH3 4270		C I logianiming I	(3)
Major Conc	entration Courses		
POL 4103		Introduction to Politics	3
POL 4104		Introduction to American Government	
POL 4105		Introduction to Comparative Politics	3
POL 4331		International Relations	3
POL 4370		Introduction to Political Theory	3
American G			
Choose three of	the following:	A To 1141 - 1771 14	(0)
POL 4310		American Political Thought	(3)
POL 4313		State and Local Government	(3)
POL 4314		Urban and Metropolitan Government	(3)
POL 4318		The American Presidency	(3)
POL 4319		The Legislative Process	(3)
POL 4320		American Constitutional Law	(3)
POL 4321		Civil Liberties	(3)
POL 4322		Criminal and Civil Due Process	(3)
Comparativ	e Government		
Choose two of t			
POL 4330	ine jonowing.	Comparative Politics	(3)
POL 4338		European Political Parties	(3)
POL 4339		Government and Politics of Russia	(3)
POL 4342			(3)
POL 4342 POL 4350		Eastern Europe in Transition	(3)
TOL 4330		Politics and Policies of the Developing Nations	(2)
DOI 4252			(3)
POL 4352		Government and Politics of	(2)
DOI 4056		Latin America	(3)
POL 4356		Government and Politics of	
DOI 1055		Northern Africa	(3)
POL 4357		Government and Politics of	
		South Africa	(3)
POL 4359		Government and Politics in the	
		Middle East	(3)
POL 4362		Government and Politics of	
		Southeast Asia	(3)
POL 4365		Government and Politics of China	(3)
POL 4367		Government and Politics of Japan	(3)
		- 1	



International Relations Choose one of the following: POL 4332 POL 4333 POL 4335 POL 4336 POL 4341 POL 4364	International Law Formulating American Foreign Policy American Foreign Policy Russian Foreign Policy	(3) (3) (3) (3) (3) (3)
Theory and Methodology Choose one of the following: POL 4311 POL 4371		(3) (3)
Electives Political science Open electives*†		18 65
Total Quarter Hours	17	74

^{*}Up to 44 q.h. allowed in business subjects.

[†]Recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity or Minor in Business Administration (see page 129).

Psychology Bachelor of Arts Degree (Major Code 319)

Core Course	es		quarter h	ours
ENG 4100			Critical Writing 1	4
ENG 4111	ENG 4112		Critical Writing 2, 3	6
Modern Lang	uage		Conversational	12
			Intermediate	12
			RA, ENG, JRN, LN, MUS, PHL, TCC)	24
		ESC, MTH, PHY)		18
Social Science	s (in three of	the following are	eas: ECN, HST, POL, SOA, SOC)	18
Major Conc	entration C	ourses		
PSY 4110			Introduction to Psychology:	
			Fundamental Issues	3
PSY 4111			Introduction to Psychology:	
			Developmental Aspects	3
PSY 4112			Introduction to Psychology:	
			Personal Dynamics	3
PSY 4220	PSY 4221	PSY 4222	Statistics in Psychology 1, 2, 3	9
PSY 4231			Psychology of Learning	3
PSY 4272			Personality	3 3
PSY 4351			Physiological Psychology	3
PSY 4381			Sensation and Perception	3
PSY 4561	PSY 4562	PSY 4563	Experimental Psychology 1, 2, 3	9
PSY 4611			Senior Seminar in Psychology	3
Electives				
Psychology				18
Open elective	s *			20
Total Quarte				174
Total Analie	TIVUIS			1/3

Psychology Bachelor of Science Degree (Major Code 319)

*Recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity.

Core Courses		quarter	hours
ENG 4100		Critical Writing 1	4
ENG 4111 ENG 4112		Critical Writing 2, 3	6
Math-Science (BIO, CHM,	ESC, MTH, PHY)		30
Major Concentration C	ourses		
PSÝ 4110		Introduction to Psychology:	
		Fundamental Issues	3
PSY 4111		Introduction to Psychology:	
DOV 4110		Developmental Aspects	3
PSY 4112		Introduction to Psychology:	2
PSY 4220 PSY 4221	PSY 4222	Personal Dynamics Statistics in Psychology 1, 2, 3	3 9
PSY 4231	151 4222	Psychology of Learning	3
PSY 4272		Personality	3
PSY 4351		Physiological Psychology	3
PSY 4381		Sensation and Perception	3
PSY 4561 PSY 4562	PSY 4563	Experimental Psychology 1, 2, 3	9
PSY 4611		Senior Seminar in Psychology	3
Electives			
Psychology			18
Open electives* †			74
Total Quarter Hours			174

*Up to 44 q.h. allowed in business subjects. †Recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity, or Minor in Business Administration (see page 129).

Sociology-Anthropology Bachelor of Arts Degree (Major Code 321)



Core Courses	quarter hours
ENG 4100	Critical Writing 1 4
ENG 4111 ENG 4112	Critical Writing 2, 3
Modern Language	Conversational 12
	Intermediate 12
Humanities (AFR 4151, ART, ASL, CMN, DRA	
Math-Science (BIO, CHM, ESC, MTH, PHY)	18
Social Sciences (in three of the following areas	ECN, HST, POL, PSY) 18
Major Concentration Courses	
SOA 4100	Physical Anthropology 3
SOA 4101	Cultural Anthropology:
	Kinship Societies 3
SOA 4102	Cultural Anthropology: State Societies 3
SOC 4100	Roles, Culture, and the Individual 3
SOC 4101	Inequality and Institutions 3
SOC 4102	Roles, Culture, and the Individual Inequality and Institutions Institutions and Social Change Social Theory 1, 2, 3 Social Research Methods 1, 2, 3
SOC 4300 SOC 4301 SOC 4302	Social Theory 1, 2, 3
SOC 4331 SOC 4332 SOC 4333	Social Research Methods 1, 2, 3 9
Electives	
Sociology-Anthropology (at least nine quarter	hours in SOA) 21
Open electives*	23
	474
Total Quarter Hours	174
*Recommended: CD 4100 Managing Career Decision	s and IN 1 4200 everksnop in Creativity.

Sociology-Anthropology Bachelor of Science Degree (Major Code 321)



Core Courses	quarter hours
ENG 4100	Critical Writing 1 4
ENG 4111 ENG 4112	Critical Writing 2, 3 6
Social Sciences (AFR 4131, AFR 4132, AFF	R 4193, ECN, HST, POL, PSY) 18
Major Concentration Courses	
SOÁ 4100	Physical Anthropology 3
SOA 4101	Cultural Anthropology:
	Kinship Societies 3
SOA 4102	Cultural Anthropology: State Societies 3
SOC 4100	Roles, Culture, and the Individual 3
SOC 4101	Inequality and Institutions 3
SOC 4102	Institutions and Social Change 3 Social Theory 1, 2, 3 9
SOC 4300 SOC 4301 SOC 4302	
SOC 4331 SOC 4332 SOC 4333	Social Research Methods 1, 2, 3 9
Electives*	
Sociology-Anthropology (at least nine qua	arter hours in SOA) 39
Open electives (preferably in the humanit	ties and math-science)**† 71
Total Quarter Hours	174

^{*}Students may use these electives to take the Human Services Concentration.

^{**}Up to 44 q.h. allowed in business subjects.

tRecommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity, or Minor in Business Administration (see page 129).

Human Services Elective Concentration (open only to B.S. degree candidates)

			quarte	r hours
SOC 4125			Social Problems**	3
SOC 4240			Sociology of Human Service	
			Organizations**	3
SOC 4241			Human Services Professions**	3
SOC 4245			Poverty and Inequality**	3
SOC 4260	SOC 4261	SOC 4262	Introduction to Social Work	
		,	Practice 1, 2, 3**	9
PSY 4110			Introduction to Psychology:	
			Fundamental Issuest	3
PSY 4111			Introduction to Psychology:	
			Developmental Aspects†	3
PSY 4112			Introduction to Psychology:	
			Personal Dynamicst	3
PSY 4372	PSY 4373	PSY 4374	Abnormal Psychology 1, 2, 3†	9
Total Quar	tor Hours			39
		000 1 11 6	RC 1	37

^{**}SOC courses can be used for SOC electives for B.S. degree.

Recommended Open Electives for Human Services Concentration Students

ECN 4130	Medical Economics 3	
ECN 4311	Human Resource Planning 3	,
ECN 4315	Income Inequality and	
	Discrimination 3	
POL 4300	Introduction to Public Administration 3	
POL 4301	Case Studies in Public Administration 3	
POL 4306	Public Policy Analysis 3	
POL 4321	Civil Liberties 3	
PSY 4240	Development: Infancy and	
	Childhood 3	
PSY 4241	Development: Adolescence 3	
PSY 4242	Development: Adulthood and	
	Aging 3	
PSY 4272	Personality 3	
SOC 4170	Race and Ethnic Relations 3	
SOC 4185	Deviant Behavior 3	
SOC 4186	Social Control 3	
SOC 4190	Juvenile Delinquency 3	
SOC 4215	Medical Sociology 3	
SOC 4225	Social Gerontology 3	
0001==0	000000000000000000000000000000000000000	

tPSY courses can be used for Social Science electives for B.S. degree.

Technical Communications Bachelor of Science Degree (Major Code 380)



Core Cours		quarter ho	urs
Basic Com	nunication		
ENG 4100 ENG 4111	ENG 4112	Critical Writing 1	4
ENG 43111	ENG 4350	Critical Writing 2, 3	6
ENG 4349 ENG 4380	ENG 4381	Expository and Persuasive Writing 1	
ART 4140	LING 4001	Writing for the Professions 1, 2 Graphic Communication and	6
1111		Production	3
JRN 4112		Writing for Media 1	3
PHL 4100		Philosophical Thinking	3
PHL 4200		Logic	3
CMN 4152		Conducting Interviews in the Professions	3
Technology	,		
COM 4101		Computer Literacy	4
MTH 4110		Contemporary Algebra 1	3
PHY 4101	PHY 4102	College Physics 1, 2	8
Choose one of	the following:		
MIS 4221		COBOL Programming 1	(3)
MIS 4241		Programming in BASIC 1	(3)
MIS 4276		C Programming 1	(3)
Major Conc	entration Courses		
TCC 4101	TCC 4102	Technical Writing 1, 2	6
TCC 4105	100 4102	Editing for Science and Technology	3
TCC 4340		Documentation Development and	
		Completion	3
Choose four of	the following:	•	
TCC 4110		Technical-Promotional Writing	(3)
TCC 4301	TCC 4302	Computer Software Technical	
TOC 1011	TGG 4040	Writing 1, 2	(6)
TCC 4311	TCC 4312	Instruction Manual Writing 1, 2	(6)
TCC 4320 TCC 4330		Proposal Writing	(3)
100 4550		The Business and Technical Presentation	(3)
Open Electi	vos*+		95
	g electives are recommended:)5
ACC 4101	ACC 4102	Accounting Principles 1, 2	(6)
ART 4366		Promotional and Technical	` '
		Publications: Design and	
		Production**	(3)
ENG 4352) (CT () C	Expository Communications	(3)
MGT 4101	MGT 4102	Introduction to Business and	"
TCC 490F		Management 1, 2	(6)
TCC 4805		Field Work in Technical Communications	(6)
		Communications	(6)

Total Quarter Hours

*Up to 44 q.h. allowed in business subjects.

**3 1/2-hour lab.

174

tAlso recommended: CD 4100 Managing Career Decisions and INT 4200 Workshop in Creativity, or Minor in Business Administration (see page 129).

Alternative Freshman-Year Program

Arlene Greenstein, Ph.D., Associate Dean Richard Wilson, Manager, and Director of Special Programs Alternative Freshman-Year Program

249 Ryder Hall 617-373-4626 Jennifer J. Wells, Assistant to the Manager, Alternative Freshman-Year Program

Program Goals

Students in the Alternative Freshman-Year Program are considered full-time day students and are degree candidates with an undeclared major. The program is designed to help students strengthen their basic skills in writing and mathematics, while helping them gain confidence in their ability to do college-level work. The program also offers students an opportunity to consider several areas of study before committing themselves to a specific major. Through the combination of a carefully prescribed curriculum and the attention of professional counselors, each student is helped to establish a program suited to his or her individual needs. These same counselors are normally available throughout the student's entire freshman year.

Program Structure

Students in the Alternative Freshman-Year Program normally take sixteen quarter hours of credit during each of their three freshman quarters, but may take 12 quarter hours during the first quarter and still be considered full-time students. Students in the Health/Science Track take a variety of course loads totalling up to

59 quarter hours, and usually requiring four consecutive quarters.

After completing the prescribed Alternative Freshman-Year Program and achieving both a cumulative quality-point average of 1.400 or better and specific program requirements as noted, students may generally continue their degree programs by transferring with sophomore status, to any program in the College of Business Administration or the College of Criminal Justice, as well as most programs in the College of Arts and Sciences. Students may also continue their degree programs within University College. In addition to the cumulative quality-point average of 1.400 or better, the College of Business Administration requires a 1.800 average in 4 key courses, namely, MTH 1113, ENG 4014, ECN 4601, and MGT 4110. A higher cumulative grade average is also required for entrance into several majors in the College of Arts and Sciences, such as Art and Architecture (2.5), Journalism (2.25), and Speech Communication (2.5).

AFY students entering the Bouvé School of Pharmacy and Health Sciences must complete 59 academic credits with a 3.0 GPA, including chemistry, biology, and advanced math courses. Entrance to the School of Pharmacy is on a space-available

basis.

Faculty and Resources

For the Alternative Freshman-Year Program, the University has carefully selected faculty members who are aware of the individual needs and goals of students working to adjust to a college program. Faculty and students meet in small

classes of not more than twenty-five students.

As members of the program, students are considered regular Northeastern University day students even though they have unique schedules and a distinctively tailored curriculum. Therefore, they generally have access to all counseling services, physical education facilities, dormitory arrangements, and extracurricular programs at the University's main campus in Boston.

Alternative Freshman-Year students are encouraged to make extensive use of the up-to-date, programmed learning resources available for self-instruction through Northeastern's Learning Resources Center. For additional assistance, these students are also frequently referred to the Academic Assistance Center or the Math/Writing Center. A third and very important resource, the Counseling Center, is also available to students for personal and academic counseling as well as for vocational testing and counseling.

Tuition and Fees

Tuition and fees for the Alternative Freshman-Year Program are the same as for students in the full-time Day Colleges. Payment of the standard tuition during the first three academic quarters of residence entitles students to forty-eight credit hours of instruction. Thus, those who take the forty-four programmed credits are entitled to a four-quarter-hour tuition adjustment at the regular freshman rate.

Because students in the Health/Science Track take up to 59 credits, a fourth quarter is usually necessary to complete the course requirements, and this addi-

tional quarter is tuition-free.

Application Procedures

For more information on the Alternative Freshman-Year Program, or to request an application, write or call the Dean of Admissions, Department of Admissions, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, 617-373-2200.

Sample One-Year Program Business Track

Quarter 1	quarter hours
ED 4003	Integrated Language Skills A 4
ENG 4013	Fundamentals of English 1 4
MTH 1000	Mathematical Preliminaries 1* 4
HST 4110	History of Civilization A† (4)
or	or
MGT 4110	Survey of Business and Management** (4)
Total Quarter Hours	12-16
Quarter 2	
ED 4004	Integrated Language Skills B 4
ENG 4014	Fundamentals of English 2 4
MTH 1010	Mathematical Preliminaries 2* 4
HST 4110	History of Civilization A (4)
or	or
ECN 4601	Economics 1** (4)
Total Quarter Hours	16
Quarter 3	
ECN 4601	Economics 1 (or Directed Elective)** 4
HST 4111	History of Civilization B 4
MGT 4110	Survey of Business and Management (or Directed Elective) 4
MTH 1113	Mathematics for Business* 4
Total Quarter Hours	16

*Students will be placed in one of three math courses depending on placement test results. Those receiving advanced placement have the option of completing MTH 1114 during freshman year. †Eligible students may take HST 4110 in the first quarter; all others take HST 4110 in the second quarter. **Business Track students may be assigned to ECN 4601 in Winter Quarter, MGT 4110 in Spring Quarter, but all are required to complete both courses by the third quarter.

	atten Education Automatication	PID 1
Sample One-Year Program: Criminal Ju		_
Quarter 1		r hours
ED 4003	Integrated Language Skills A	4
ENG 4013	Fundamentals of English 1	4
MTH 1000	Mathematical Preliminaries 1*	4
SOC 4010	Principles of Sociology 1	(4)
Total Quarter Hours		12-16
Quarter 2		- 110
ED 4004	Integrated Languages Skills B	4
ENG 4014	Fundamentals of English 2	4
HST 4110	History of Civilization At	$\overline{4}$
SOC 4011	Principles of Sociology 2	(4)
or	or	(-)
MTH 1010	Mathematical Preliminaries 2	(4)
Total Quarter Hours		16
		10
Quarter 3		
HST 4111	History of Civilization B	4
POL 4106	Introduction to Politics	4
SOC 4011	Principles of Sociology 2	4
NET I 4404	(or Directed Elective)††	4
MTH 1101	Basic Algebraic Applications	4
	(or Directed Elective)++	
Total Quarter Hours		16
*Students will be placed in one of two math levels,	depending on placement test results. †Elig	ible
students may take HST 4110 in the first quarter, fol		
students will take HST 4110 in the second quarter.		
ttThe Directed Elective is to be chosen with consid	eration for the student's intended major.	
C 1 O V P II III C	77 - 1	
Sample One-Year Program: Health Scie		
Quarter 1	quarter l	nours
Quarter 1 MTH 1010	quarter h Mathematical Preliminaries 2	4
Quarter 1 MTH 1010 ENG 4013	quarter h Mathematical Preliminaries 2 Fundamentals of English 1	4
Quarter 1 MTH 1010 ENG 4013 CHM 1110	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry	4
Quarter 1 MTH 1010 ENG 4013	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills	4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry	4
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills	4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills	4 4 5 2
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1	4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics	4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2	4 4 5 2 15 4
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1	4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills	4 4 5 2 15 4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1	4 4 5 2 15 4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills	4 4 5 2 15 4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills	4 4 5 2 15 4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2	4 4 5 2 15 4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1	4 4 5 2 15 4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3 BIO 1140 CHM 1122	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1 General Chemistry 2	4 4 5 2 15 4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3 BIO 1140	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1	4 4 5 2 15 4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3 BIO 1140 CHM 1122 ENG 1111 D. Elec.	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1 General Chemistry 2 Freshman English 2	4 4 5 2 15 4 4 5 2 15 4 4 5 4 4 5
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3 BIO 1140 CHM 1122 ENG 1111	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1 General Chemistry 2 Freshman English 2	4 4 5 2 15 4 4 5 2 15
Quarter 1 MTH 1010 ENG 4013 CHM 1110 ED 4001 Total Quarter Hours Quarter 2 MTH 1106 ENG 4014 CHM 1111 ED 4002 Total Quarter Hours Quarter 3 BIO 1140 CHM 1122 ENG 1111 D. Elec. Total Quarter Hours Quarter 4	quarter h Mathematical Preliminaries 2 Fundamentals of English 1 Pre-Chemistry Integrated Language Skills Development 1 Fundamentals of Mathematics Fundamentals of English 2 General Chemistry 1 Integrated Language Skills Development 2 Basic Animal Biology 1 General Chemistry 2 Freshman English 2 Directed Elective	4 4 5 2 15 4 4 5 2 15 4 4 7
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12

Total Quarter Hours

154

Course Descriptions

Not all the courses listed in this *Bulletin* are offered every year. A final list of courses to be offered is contained in the University College *Schedule Guide*, which gives the hours and days that classes meet and their locations. These schedules are issued prior to the fall, winter, spring, and summer quarters.

Abbreviations

q.h.: quarter hours (credit earned) cl.: hours required in class per week Prereq.: Prerequisite

Key To Department Codes

ACC	Accounting	LNF	Language—French
AFR	African-American Studies	LNG	Language—German Language—Italian
ART	Art, Architecture, Graphics	LNI	Language—Italian
ASL	American Sign Language	LNJ	Language—Japanese
BIO	Biology	LNN	Language—Swedish
BL	Business Law	LNR	Language—Russian
CD	Career Development	LNS	Language—Spanish
CHM	Chemistry	MGT	Management
CJ	Criminal Justice and Security	MIS	Management Information
CMN	Communication Studies		Systems
COM	Computer Literacy	MKT	Marketing
CRS	Counseling, Psychology	MLS	Medical Laboratory Science
	Rehabilitation and	MS	Management Science
	Special Education	MTH	Mathematics
DRA	Drama	MUS	Music
ECN	Economics	NUR	Nursing
ED	Education	OM	Operations Management
EMS	Emergency Medical Services	PED	Physical Education
ENG	English	PHL	Philosophy and Religion
ESC	Earth Sciences	PHY	Physics
FI	Finance	POL	Political Science
HIA	Health Information	PSY	Psychology
	Administration	PUR	Purchasing
HMG	Health Management	RAD	Radiologic Technology
HRM	Human Resources	RE	Real Estate
	Management	REC	Therapeutic Recreation
HSC	Health Science	SLA	Speech-Language Pathology
HST	History		and Audiology
HTL	Hotel and Restaurant	SOA	Sociology-Anthropology
	Management	SOC	Sociology
INT	Interdisciplinary	TCC	Technical Communications
JRN	Journalism	TRN	Transportation

ACCOUNTING

ACC 4101 Accounting Principles 1 (3 q.h.) Study of accounting issues and objectives for proper preparation and interpretation of financial statements. Covers the nature, function, and environment of accounting, the basic accounting model, and the accounting cycle, while emphasizing accounting for service and merchandising businesses. Also covers cash and accounts receivable.

ACC 4102 Accounting Principles 2 (3 q.h.) Continuation of ACC 4101. Emphasizes issues in financial reporting, valuation, and income measurement. Includes inventories, plant and equipment, bonds, stockholders' equity, and changes in financial position. *Prereq. ACC 4101*.

ACC 4103 Accounting Principles 3 (3 q.h.) Preparation and interpretation of cost accounting information and its use in the managerial decision-making process. Includes ratio analysis, present value, analysis of costvolume relationships, fixed and variable costs, break-even analysis, job order, and process cost systems. *Prereg. ACC* 4102.

ACC 4105 Accounting Principles 1 and 2 (Intensive) (6 q.h.)
Same as ACC 4101 and ACC 4102.

ACC 4106 Accounting Principles 2 and 3 (Intensive) (6 q.h.)
Same as ACC 4102 and ACC 4103.

ACC 4120 Essentials of Personal Income Taxation (3 q.h.)

Special course for non-accounting majors, designed to teach important aspects of personal income taxation on both federal and state levels. Tax laws, tax planning, and the preparation of individual returns are emphasized.

ACC 4301 Intermediate Accounting 1 (3 q.h.)

Introduction to financial accounting concepts, techniques, and procedures. Areas of intensive treatment are the development and framework of accounting theory, basic financial statements, and cash and receivables. *Prereq. ACC 4103.*

ACC 4302 Intermediate Accounting 2

Continuation of the study of accounting concepts and procedures. Detailed examination

of inventories, tangible and intangible assets, and depreciation. *Prereq. ACC* 4301.

ACC 4307 Intermediate Accounting 3 (3 q.h.)

Continuation of the study of accounting concepts and procedures, with emphasis given to conceptual aspects of measurement of liabilities and to alternative accounting treatments and procedures. *Prereq. ACC 4302*.

ACC 4310 Cost Accounting 1 (3 q.h.) Examines cost determination, cost behavior, costing systems, and an introduction to budgeting. *Prereq. ACC 4103*.

ACC 4360 Accounting for Business Combinations (formerly ACC 4320) (3 q.h.) A study of accounting issues associated with business combinations, including the purchase and pooling methods of consolidation. Not open to students who have taken ACC 4320. Prereq. ACC 4408 or ACC 4404.

ACC 4361 Advanced Accounting Issues (formerly ACC 4321) (3 q.h.)

The focus of this course will include an examination of accounting issues associated with governmental and nonprofit organizations. Other advanced accounting topics such as multinationals are also considered. Not open to students who taken ACC 4321. Prereq. ACC 4408 or ACC 4404.

ACC 4400 Accounting Information Systems (Reserved) (3 q.h.)

Provides a broad survey of accounting information systems concepts and applications. Examines how computer technology impacts accounting information processing and how accounting systems can be effectively controlled. Prereq. MIS 4102, ACC 4310, ACC 4307 and 80 q.h.

ACC 4408 Intermediate Accounting 4 (Reserved) (3 q.h.)

This course completes the intensive study of measurement and reporting issues in modern accounting practice. Emphasis is given to such topics as stockholder's equity and earnings per share. *Prereq. ACC 4307 and 80 q.h.*

ACC 4411 Cost Accounting 2 (Reserved)

(3 q.h.) Continuation of ACC 4310 with special emphasis on cost allocation. Covers use of cost data in decision-making and the control process. *Prereg. ACC 4310 and 80 q.h.* ACC 4425 Auditing 1 (Reserved) (3 q.h.) An examination of auditing concepts and standards relevant to the attest function. Includes coverage of such topics as: ethical and legal responsibilities of the auditor, internal control, and auditor reports. *Prereq. ACC* 4400 and ACC 4307and 80 q.h.

ACC 4426 Auditing 2 (Reserved) (3 q.h.) Continued examination of auditing concepts and standards relevant to the attest function. Includes compliance and substantive tests as they relate to specific transaction cycles and the use of statistical sampling techniques. *Prereq. ACC* 4425.

ACC 4440 Federal Income Taxes 1 (Reserved) (3 q.h.)

An in-depth study of federal tax law as it applies to individuals. In addition to a coverage of the law, tax planning concepts will be emphasized. *Prereq. ACC* 4307 and 80 q.h.

ACC 4441 Federal Income Taxes 2 (Reserved) (3 q.h.)

Continuation of ACC 4440. Property transactions, including non-taxable transactions; fundamental tax law relating to corporate formation and operation, partnerships, and S corporations. *Prereq. ACC* 4440.

ACC 4442 Federal Income Taxes 3 (Reserved) (3 q.h.)

Continuation of ACC 4441. Covers application of federal tax laws to estates, gifts, and trusts; and corporate and partnership taxation. *Prereg. ACC* 4441.

AFRICAN-AMERICAN STUDIES

AFR 4131 African-American History 1 (3 q.h.)

This survey covers the development of black America from the period of slavery through Reconstruction, with emphasis on the historical links between Africa and America and their impact on black development in the United States.

AFR 4132 African-American History 2

(3 q.h.)
This course examines the development of black America from Reconstruction to the present, and the effects of events in the United States and world history on the development of black America. There is special emphasis

on contemporary issues and how these issues can be seen through an historical perspective.

AFR 4151 Survey of African-American Art

(3 q.h.)

Black art, like black literature, has always been an important aesthetic social statement by the African-American artist. This course offers an historical and critical examination of African-American art from the nineteenth century to the present, with special emphasis on the effects of European and African art styles on the black artist in America.

AFR 4193 Africa Today (3 q.h.)

With increasing numbers of nations striving for economic and political control in Africa, and with imperialist and colonial ideas remaining in the living memory of Africans, Africa presents a complex political and social picture to the rest of the world. This course examines some of the salient features of black art, politics, and identity in Africa.

ART AND GRAPHICS

ART 4100 History of Art to the Fourth Century A.D. (formerly History of Art)

(3 q.h.)

Survey of history of Western art from prehistoric times to the end of the Roman Empire. Includes the study of major monuments, artists, and stylistic developments that evolved during the Prehistoric, Primitive, Egyptian, Mesopotamian, Aegean, Greek, and Roman periods. Slide lectures and discussions.

ART 4101 History of Art to the Sixteenth

Century (3 q.h.)

Survey of history of Western art from the end of the Roman Empire to the late sixteenth century. Includes the study of major monuments, artists, and stylistic developments that evolved during the Early Christian, Byzantine, Early Medieval, Romanesque, Gothic, Early and High Renaissance, and late sixteenth-century Mannerist periods. Slide lectures and discussions.

ART 4102 History of Art to the Twentieth

Century (3 q.h.)

Survey of history of Western art from the late sixteenth century to the twentieth century. Includes the study of major monuments, artists, and stylistic developments that evolved

during the Baroque and Rococo periods, and in nineteenth- and twentieth-century Europe and America. Slide lectures and discussions.

ART 4105 Art Through the Ages (3 q.h.) Concentrated historical survey of Western art from prehistoric cave paintings to the twentieth century. Includes the study of major monuments, artists, and stylistic developments found in the Pre-Classical, Classical, Medieval, Renaissance, and Baroque periods, and in nineteenth- and twentieth-century Europe and America. Slide lectures and discussions.

ART 4106 Introduction to Art (3 q.h.) Introduction to the language, techniques, aesthetics, and visual styles of painting, sculpture, graphic art, and architecture. Includes individual and comparative studies of major works of art in each field, discussion of terminology, and historical examination of the social, political, and cultural significance of each art form. Slide lectures and discussions.

ART 4110 Modern Art (3 q.h.)
Examination of major movements and developments in painting and sculpture from

velopments in painting and sculpture from the late nineteenth century to the present. Emphasizes changing aesthetic views and the artistic, philosophical, historical, sociological, and political influences shaping those views and the modern movement as a whole. Slide lectures and discussion.

ART 4112 Visual Foundations (Studio)* (3 q.h.)

An introduction to the fundamental principles, nature, and meaning of visual organization, leading to an understanding of the concepts of two- and three-dimensional art. Topics include problems of space, balance, and formal inter-relationships as they occur in a variety of fine arts and design.

ART 4115 Graphic Design for Non-majors (Studio)* (3 q.h.)

An introduction to graphic design processes, principles, and concepts. Students have the opportunity to learn how to estimate jobs, design layouts, and prepare mechanicals and page layouts. Other topics include typography and type specification, copyfitting, design terminology, and an introduction to printing processes.

ART 4121 Principles of Drawing and Composition (Studio)* (3 q.h.)

Introduction to the fundamental principles of drawing and composition through formal graphic studies of line, shape, value, form, light, space, pattern, and texture. Stresses the use of pencil, charcoal, conte crayon, and other dry media. Slide lectures and critiques as needed.

ART 4122 Introduction to Figure Drawing (Studio)* (3 q.h.)

Introduction to drawing the human form. Includes basic studies in anatomy, proportion, negative/positive space, contour, gesture, mass, line, composition, and drawing technique. Slide lectures, critiques, and weekly sessions drawing from the model. (Laboratory fee.)

ART 4123 Drawing Workshop (Studio)* (3 q.h.)

Introduction to more advanced problems in the analysis of visual language and its creative organization. Emphasizes strengthening drawing techniques and developing a personal style.

ART 4126 Landscape Painting (Studio)* (3 q.h.)

An introduction to the art of landscape painting. This course will draw upon the traditions of landscape representation in the history of art, and the creative and expressive potential of each student. Sketching and painting outdoors are treated as an integral part of the courses.

ART 4127 Basic Painting (Studio)* (3 q.h.) Introduction to the fundamentals of painting. Includes formal studio assignments in the study of color, light, pictorial space systems, form, texture, and composition to establish a foundation for more individual, creative expression. Critiques and slide lectures as needed.

ART 4128 Intermediate Painting (Studio)*

(3 q.h.)

Fundamental principles of painting, followed by more advanced studies in shape, scale, texture, brushstroke, and edge as well as color, light, form, and composition. Examines problems in a variety of stylistic approaches and techniques from the past and the present. Critiques and slide lectures as needed.

^{*}Courses designated "(Studio)" meet for 3 1/2 hours.

ART 4129 Painting Workshop (Studio)*

(3 q.h.)

Individual development through a structured, project-oriented approach. Encourages recognition of the conceptual aspects of painting as well as the development of a personal painting style and unique visual imagery. Critiques and slide lectures as needed.

ART 4135 Design Fundamentals (Studio)* (formerly Design Foundations and

Techniques) (3 q.h.)

Introduction to the basic principles of twodimensional design including the organization of forms in two dimensional space and the concepts of repetition, contrast symmetrical and asymmetrical composition, balance and unity. This is a studio course in which students develop their design sense in order to move on to more sophisticated problems in graphic design.

ART 4136 Basic Watercolor Painting (Studio)* (3 q.h.)

Practice and creative expression in the technical fundamentals of watercolor.

ART 4139 Color Theory and Practice

(Studio)* (3 q.h.)

Exploration of the objective nature and expressive possibilities of color. Through class work and projects, students examine the major theories and laws of color, its harmonies and special characteristics as well as color psychology, symbolism, and orchestration. Students discover their intuition for color and develop its application in art and design.

ART 4140 Graphic Communication and

Production (3 q.h.)

Overview of the design and production processes of printed materials. Examines the designer's role in concept development and layout and introduces reprographics, typesetting, printing and color techniques, paper, and bindery methods. The scheduling and economic factors involved in bringing a piece to print are also addressed.

ART 4141 Graphic Design 1 (Studio)*

(3 q.h.)

Introduction to professional problem-solving in graphic design, including typographic and pictorial elements and their integration with verbal content to communicate ideas. Emphasis is on the fundamentals of visual thinking, concept development, and twodimensional layout. Students gain experience with the design process from thumbnail sketches to the finished mechanical. *Prereq.* ART 4135 or instructor's permission.

ART 4142 Graphic Design 2 (Studio)*

(3 q.h.)

Intermediate study and creative work in graphic design, with emphasis on creating overall design concepts for client presentations. Students explore effective problemsolving techniques by taking a variety of projects from concept to finished presentation. *Prereq. ART 4141*.

ART 4143 Advertising Design (Studio)*

(3 q.h.)

Introduction to advertising and to the language and design problems commonly met in the field. Study and creative work in advertising research analysis, layout, and preparation of client presentations. Marketing fundamentals are also addressed. Prereq. ART 4151 or instructor's permission. Prereq. for Advertising Certificate students: ART 4115.

ART 4151 Typography (3 q.h.)

The evolution of typography and its current applications. Emphasizes understanding basic typographic terms and techniques, acquiring composition skills such as copyfitting and type specification, understanding typography as symbol and as written record, exploring design concepts through typography, and learning the creative potential of new typesetting systems.

ART 4160 Basic Photography (Studio)*

(3 q.h.)

Use of the camera, the negative, and the black-and-white print for the beginning student. Includes weekly shooting assignments, demonstrations, and hands-on darkroom experience. (Laboratory fee.)

ART 4161 Intermediate Black and White Photography (Studio)* (3 q.h.)

Continuation of ART 4160. Focuses on further practice in darkroom skills and production of clear and expressive images. (Laboratory fee.) Prereq. ART 4160.

ART 4162 Photography Workshop (Studio)*

(3 q.h.)

Through close interaction with the instructor, students refine their technical skills and learn to make meaningful decisions about their relation to the world through the use of

^{*}Courses designated "(Studio)" meet for 3 1/2 hours.

photography. Alternative processes such as infrared, toners, and large format are demonstrated and used. Contemporary trends in photography are illustrated through frequent slide presentations. (Laboratory fee.) Prereq. ART 4160 or equiv.

ART 4163 Introduction to Color Photography (Studio)* (3 q.h.)

Basic color theory and contemporary photographic processes and practices. Students work with color negative materials and print from color slides and negatives. Color printing facilities are provided. Lectures and critiques when appropriate. (Laboratory fee.) Prereq. ART 4160 or equiv.

ART 4164 Color Projects in Photography (Studio)* (3 q.h.)

Continuation of ART 4163. (Laboratory fee.) Prereq. ART 4163.

ART 4165 Seeing in Color (3 q.h.) Investigates basic principles of color photography through lectures, demonstrations, and critique. Color slide film will be used, eliminating the need for lab work. Emphasis is on using color for creative personal expression. (No prereq.)

ART 4171 American Cinema (3 q.h.)
This course explores the uniquely distinguishing characteristics of American cinema. These range from such formal elements as camera angles, lighting, editing, sound, acting, narrative structure and construction of point of view. The course will also analyze such recurring concerns of American cinema as the individual and community, issues of masculinity and violence, urban alienation, uprootedness and adolescence. The directors whose work will be discussed include Michael Cimino, Martin Scorsese, Robert Altman, Francis Ford Coppola, and John

ART 4173 International Cinema (3 q.h.) This course examines films of such diverse countries as France, Italy, Greece, India, Japan, and Argentina and shows how film style and film language are culturally based and reflect the underlying values of culture. The course also analyzes the differences in the construction of narrative and point of view in the films of the different countries. The impact of cultures with communal or extended family social structures on camera angles and sound is also examined. The directors whose work will be studied include

Karel Reisz, Claude Chabrol, Luchino Visconti, Kenji Mizoguchi, and Satajit Ray.

ART 4174 Themes in Film (3 q.h.)

This course takes one theme as its subject and explores that theme fully through films from different countries. The themes include family relationships, gender, coming of age, and war, as well as the journey/road film, the concert/music film, and the exploration of the "other" in film. The course focuses on different portrayals of a given theme through analysis of film language such as camera angles, sound, editing, narrative structure, and construction of point of view, and how these relate the story of the film.

ART 4175 History of Graphic Design

(3 q.h.)

Graphic design from the mid-nineteenth century (the Industrial Revolution) to the present, with references to earlier influences. Focuses on the evolution of the graphic design field, its nature and function, major periods and trends, and the influence of technology and society. Slide lectures and discussion.

ART 4176 International Directions in Graphic Design (3 q.h.)

Contemporary theories and practices in international graphic design. Focuses on design activities in such major industrial nations as Germany, Italy, France, England, Canada, Japan, and the United States. Case studies reflecting graphic design solutions to a variety of visual communication problems

ART 4181 Introduction to Computer Graphics (Studio)* (formerly Introduction to Computer Aided Graphic Design) (3 a h.)

are examined. Slide lectures and discussion.

puter-Aided Graphic Design) (3 q.h.) Introduction to the terminology, concepts, and applications of computer-aided graphic design. Through lectures, demonstrations, and labs, students explore the range of computer graphics applications on personal computer (DOS and MAC) systems; input and output devices; and the advantages and limitations of computers as design tools. Limited enrollment. (Laboratory fee.) Prereq. ART 4141.

ART 4183 Electronic Publishing Systems (Studio)* (3 q.h.)

Designed to teach the computer novice how to apply the basics of desktop publishing software for business and corporate publications. Students will use page layout pro-

Ford.

^{*}Courses designated "(Studio)" meet for 3 1/2 hours.

grams such as Quark Xpress or Aldus Pagemaker. Design, page-layout, typography, hardware, and management issues will be applied to actual publications and business documents. Limited enrollment. (Laboratory fee.) Prereg. ART 4181.

ART 4184 Presentation Graphics (Studio)* (3 q.h.)

Students will create and produce computerized slide presentations. Emphasis is placed on the selection and layout sequencing of type, visuals, and peripheral elements for word slides, graphs, charts, and illustrations to be used in corporate, educational, and advertising presentations. Limited enrollment. (Laboratory fee.) Prereq. ART 4181.

ART 4185 Creative Imaging: Custom Computer Design (Studio)* (3 q.h.) Scanning and image enhancement techniques are utilized to create original visuals appropriate for advertising and publishing graphics as well as fine art. Limited enrollment. (Laboratory fee.) Prereq. ART 4181.

ART 4186 Computer Graphic Design Portfolio (Studio)* (3 q.h.)

Students may choose to either edit and refine a series of their best computer graphic designs or to work on a specific portfolio design project. All students will design a self-promotion piece using the layout application of their choice. (Laboratory fee.) Prereq. ART 4185 and 30 q.h. of computer graphic certificate courses. (Not a regularly scheduled course. Students must contact Liberal Arts Office to register to work with an instructor.)

ART 4187 Advanced Computer Illustration (Studio)* (formerly Graphic Software Studies 1) (3 q.h.)

Advanced computer illustration studies using popular vector-based drawing programs such as Adobe Illustrator, Aldus Freehand, and Corel Draw. Limited enrollment. (Laboratory fee.) Prereq. ART 4183.

ART 4188 Advanced Raster Graphics (Studio)* (formerly Graphic Software Studies 2) (3 q.h.)

Identification and application of pixel/raster-based paint programs such as Targa Tips, Pixel Paint, and Photoshop. Limited enrollment. (Laboratory fee.) Prereq. ART 4183 and

ART 4185.

ART 4189 Advanced Electronic Publishing Design (Studio)* (formerly Graphic Software Studies 3) (3 q.h.)

Identification and application of pagination, layout, and design programs such as Page-Maker and Quark Xpress. Limited enrollment. (Laboratory fee.) Prereq. ART 4183.

ART 4204 Italian Renaissance Art (3 q.h.) Survey of Italian painting, sculpture, and architecture of the fifteenth and sixteenth centuries, with special attention to their historical, cultural, and social contexts. Considers how Renaissance ideals were reflected in the renewed interest in classical harmony and order, and in the growing self-awareness, individualism, and naturalism of the time. Covers such artists as Giotto, Donatello, Botticelli, Michelangelo, da Vinci, Raphael, and Titian.

ART 4212 Nineteenth Century Painting (3 q.h.)

A study of European painting of the nineteenth century, focusing on Neo-Classicism, Romanticism, Realism and especially Impressionism. The course emphasizes French painting, but it also considers important developments in Spain, England, and Germany.

ART 4213 Modern Painting (3 q.h.) Developments in painting from the late nineteenth century through the early 1930s, examining major schools, movements, and artists from Post-Impressionism through Surrealism. Focuses on important shifts in painting concepts and the rise of innovative modes of expression instrumental in establishing the foundation of Modernism.

ART 4214 Contemporary Painting (3 q.h.) Developments in painting from the early 1940s to the present, including major schools, movements, and artists. Focuses on the cultural impact of the exodus of artists from Europe to the United States prior to World War II, the meteoric rise of Abstract Expressionism, and the diversity of movements since World War II, such as Pop Art, Minimalism, Conceptual Art, and New Realism.

ART 4220 American Painting and

Sculpture (3 q.h.)

American painting and sculpture from colonial times through the early 1930s. Includes the study of painting from itinerant colonial "limners" through Copley, Benjamin West, and the English tradition; the Hudson River School; Eakins, Hopper, Marin, Stella, and O'Keeffe; and the founding of American Modernist painting. Also examines sculpture from colonial gravestone reliefs through Rush, Augur, and the public monuments of French, Saint-Gaudens, and Calder.

ART 4223 American Architecture (3 q.h.) American architecture from the Colonial period through the early 1930s. Includes the seventeenth-century Early American style, the eighteenth-century Georgian style, the Republican style, mid-nineteenth-century Revival styles, the Stick-and-Shingle styles, Richardsonianism, Sullivan and the rise of the skyscraper, and Frank Lloyd Wright.

ART 4228 Twentieth-Century Architecture

(3 q.h.)

A study of the forms and principles of European and American architecture of the twentieth century, with particular emphasis on the work of such key figures as Frank Lloyd Wright, Mies van der Rohe, Le Corbusier, and Louis Kahn, and such influential movements as the Dutch de Stijl, Russian constructivism, and American post-modernism.

ART 4230 History of Photography (3 q.h.) Developments in photography from the early daguerreotypes to the present. Includes major movements, styles, artists, and significant technological developments. Slide lectures and assigned readings.

ART 4231 Contemporary Photography

(3 q.h.)

Evolution of styles and techniques in contemporary photography since World War II. Emphasis is on the variety of image-making techniques and photographic styles and concepts of the last twenty years. Slide lectures and assigned readings.

ART 4251 Portfolio Development (Studio)* (formerly Advanced Graphic Design)

(3 q.h.)

Portfolio-development course for students who have successfully completed all other Graphic Design and Visual Communication certificate program requirements. Emphasis

is on professional design skills and personal style. Prereg. ART 4151 and 27 q.h. of graphic design certificate courses.

ART 4366 Promotional and Technical Publications: Design and Production

(Studio)* (3 q.h.)

Design, production, and economics of promotional and technical publications. Using a desktop design/publishing system, students explore creative solutions in producing marketing, advertising, and sales-support publications as well as technical service manuals, operating guides, and other documentation. (Laboratory fee.) Prereq. ART 4183. Not open to students who have taken ART 4364 or ART 4365.

ART 4367 Pictorial Imagery for the Graphic Designer (Studio)* (formerly Illustration)

(3 q.h.)

An introductory course in image conceptualization including photography and illustration. Techniques and methods covered include cropping and scaling, photo shoots and art direction, photo manipulation, research and buying original art and stock.

ART 4368 Graphic Design for Media

(3 q.h.)

Surveys the expanding use of slide-tape, multi-image, and multi-media video and film in areas ranging from public relations and sales to documentary and entertainment presentations. The collaborative role of writers, producers, and art directors in the design and production of media projects, particularly audio-visual projects, is explored. *Prereq. ART 4151*.

ART 4402 Marketing Strategies for Print-

ing and Publishing (3 q.h.)

Topics include the integrated nature of marketing; the relationship of marketing to product development; advertising, promotion, and sales; the creation of marketing support materials; and the development of an overall marketing plan and timeline.

ART 4410 Electronic Imaging Systems

(Studio)* (3 q.h.)

An introduction to current black-and-white and color image scanning, processing and separation technology for page and film assembly. Concepts, terminology, and tech-

*Courses designated "(Studio)" meet for 3 1/2 hours.

niques of manipulating, merging, and creating color corrected and separated graphics. (Laboratory fee.) Prereq. ART 4366.

ART 4421 Methods of Book Design

(Studio)* (3 q.h.)

The basic terminology, tools, and skills of book design. Students practice drawing layouts, casting off manuscript, specifying type, and dummying pages.

ART 4475 Graphic Arts Production Control

(3 q.h.)

The techniques of managing production in commercial printing and publishing plants. Specialization vs. standardization, production forecasting and control; routing and planning; records of production; quality control; and effective use of personnel. Various production management controls of web- and sheet-fed, commercial, and publication printing are presented, analyzed, and discussed.

ART 4479 Estimating Procedures for the

Graphic Arts (3 q.h.)

Basic estimation procedures and principles for single- and multi-color printing. All facets of planning the job for estimating: design and layout, typography, paper, prep and plates, presswork, binding, and finishing. Emphasis throughout is on active student participation in solving practical estimation problems.

ART 4600 Fundamentals of Publishing

An overview of the publishing industry, from the initial "why" to new trends and how they effect its future. Topics covered include: acquisitions, editorial work, design and art preparation, production and manufacture, marketing, and the importance of coordinating all functions within a publishing company.

ART 4605 Rights and Reproductions (3 q.h.) An overview of the copyright law and subsidiary rights, including the negotiation of rights in the original contract, the role of the permissions editor, and current contract and legal issues facing writers and editors today.

ART 4810 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

ART 4811 Honors Program 2 (4 q.h.) See ART 4810. ART 4812 Honors Program 3 (4 q.h.) See ART 4810.

ART 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prerequisite 87 q.h.*

ART 4816 Advanced Tutorial 2 (3 q.h.) See ART 4815.

ART 4820 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ART 4821 Independent Study 2 (3 q.h.) See ART 4820.

ART 4822 Independent Study 3 (3 q.h.) See ART 4821.

ART 4823 Field Work in Art (6 q.h.)
Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 24 for details.

ART 4910 Internship in Graphic Arts

(1 q.h.)

The graphic arts internship is an opportunity for students to obtain supervised professional experience (related to coursework) at an on-site location. See page 25 for details. Prereq. Program Director's approval.

AMERICAN SIGN LANGUAGE

ASL 4101 American Sign Language 1 (4 q.h.) Introduction to American Sign Language, the language used by members of the Deaf community in the United States and parts of anglophone Canada. Focuses on conversation in signs, basic rules of grammar, and cultural aspects of the Deaf community.

ASL 4102 American Sign Language 2 (4 q.h.) Continuation of basic American Sign Language and culture study, with emphasis on building receptive and expressive sign vocabulary; use of signing space; use of nonmanual components, including facial expressions and body postures; and an introduction to fingerspelling. Prereq. ASL 4101 or by examination.

^{*}Courses designated "(Studio)" meet for 3 1/2 hours.

ASL 4201 Intermediate American Sign

Language 1 (4 q.h.)

Further development of receptive and expressive skills, fingerspelling, vocabulary building, and grammatical structures. Encourages more creative use of expression, classifiers, body postures, and the signing space. Introduces sign variations (regional and ethnic), and political and educational institutions of the Deaf community. Prereq. ASL 4102 or by examination.

ASL 4202 Intermediate American Sign Language 2 (4 q.h.)

Intensive practice involving expressive and receptive skills in storytelling and dialogue. Introduces language forms found in ASL poetry and cultural features as they are displayed in art and theatre. *Prereq. ASL* 4201.

ASL 4301 Advanced American Sign Language Proficiency 1 (4 q.h.)

Vocabulary building and mastery of grammar through rigorous receptive and expressive language activities. Includes studentled discussions, debates, and prepared reports on topics in Deaf culture, society, and current affairs. Includes ten hours of field work. *Prereq. ASL* 4202.

ASL 4302 Advanced American Sign Language Proficiency 2 (4 q.h.) Continuation of ASL 4301. Includes tenhours of field work. *Prereq. ASL* 4301.

ASL 4410 Linguistics of American Sign Language (3 q.h.)

For skilled ASL signers with no previous training in linguistics. Conducted in ASL, the course is descriptive and data-oriented rather than theoretical. Includes the parts of a sign; building words in ASL; sentence structure (questions, statements, relative clauses, etc); the meaning and issue of iconicity; organization of sentences according to old and new information; and the structure of stories. Also, grammatical features of ASL, such as classifiers, specifiers, verb modulations and aspects, and the role of facial expression. Not open to students who have taken ASL 4404. Prereq. ASL 4202.

ASL 4411 Deaf History (3 q.h.)

The history of Deaf people in the Western world, with emphasis on the American Deaf community, its language, education, and relation to hearing society. Not open to students who have taken ASL 4403. Prereq. ASL 4201 or instructor's permission.

ASL 4412 American Deaf Culture (3 q.h.) The status of Deaf people as both a linguistic and cultural minority. Designed for individuals who may or may not have had prior experience with Deaf people, the course raises questions concerning the nature of signed language and its varieties, the education of Deaf people, the historical treatment of deafness, the sociological and cultural makeup of Deaf individuals. Not open to students who have taken ASL 4402. Prereq. ASL 4101 or instructor's permission.

ASL 4413 ASL Literature (formerly Deaf Literature) (3 q.h.)

Covers various genres of literature by and about Deaf people. Concentrates on Deaf characters and the influences Deaf culture and Deaf history have on the literary works. Includes selected works from the early 1900s to the present, including videotaped materials. Not open to students who have taken ASL 4401. Prereq. ASL 4201 or instructor's permission.

ASL 4600 Introduction to Interpreting (formerly ASL 4501 Sign Language Interpreting

1) (3 q.h.)

Overview of the field of interpretation. Emphasis is on exploring interpretation as a career option by identifying requisite responsibilities, skills, and aptitudes, the process of becoming an interpreter, employment options, and current issues in the field. Prereq. Completion of the ASL and Deaf Studies Certificate or instructor's permission.

ASL 4601 American Sign Language-English Interpreting 1 (4 q.h.)

Study of the process of interpretation, overview of theoretical models, practice of requisite skills and process tasks, application of skills and theory to the translation process. Prereq. ASL 4600, ASL 4609 (may be taken concurrently), or instructor's permission.

ASL 4602 American Sign Language-English Interpreting 2 (4 q.h.)

Continuation of the study of the interpretation process, including practice of requisite skills and process tasks of increased complexity. Application of process skills, contrastive cultural analysis and teaming skills to the consecutive interpretation process. Prereq. ASL 4601, ASL 4610 (may be taken concurrently), or instructor's permission.

ASL 4603 American Sign Language-English Interpreting 3 (4 q.h.)

Continuation of the study of the interpretation process, including practice of requisite skills and process tasks of increased complexity, and application of process skills and contrastive group dynamics and discourse analysis to the simultaneous interpretation process. Prereq. ASL 4602 or instructor's permission.

ASL 4604 Special Topics in Interpreting

Exploration of various topics in the field of interpreting and/or the theory and practice of specialized work. Topics rotate and may include such topics as current professional and ethical models, health issues for interpreters, interpreting in mental health, legal, or medical settings, and interpreting for deafblind individuals. Students may take this course up to three times for credit, provided they focus on a different topic each time.

ASL 4606 Interpreter Role and Ethics (3 q.h.)

Prereq. instructor's permission.

Exploration of ethical standards and dilemmas in ASL-English interpretation through the use of discussion, hypothetical situations, and role plays. Emphasis is on values, ethics, and morality; professional principles; power, responsibility, and group dynamics; and the decision-making process. Prereq. ASL 4603 (may be taken concurrently), or instructor's permission.

ASL 4607 Interpreting Lab (4 q.h.)
Practice in consecutive and simultaneous interpreting skills, with constructive feedback.
Prereq. ASL 4603 or instructor's permission.

ASL 4608 Practicum (4 q.h.)

Practical interpreting experience in various settings serving Deaf people. Biweekly seminar focuses on linguistic and ethical questions and dilemmas. Requires six hours per week of supervised experience. Prereq. ASL 4603, ASL 4606, ASL 4607 with a grade of B or better, or instructor's permission.

ASL 4609 Contrastive Analysis for

Interpreters (4 q.h.)
Study of the major linguistic features and cultural features of Deaf and non-Deaf communities. Compares and contrasts basic similarities and differences in the structures of ASL and English and the values, beliefs and

norms of the Deaf and non-Deaf communities. Primary focus is on pragmatics and discourse and on increasing student awareness of American Deaf culture and general American culture. Prereq. ASL 4600 or instructor's permission.

ASL 4610 Interpreters at Work (3 q.h.) Exploration of the day-to-day concerns of working as an interpreter, focusing on group dynamics and various populations, settings, and environmental factors, business aspects of the field, and how and when to work as a team. Focuses further attention on increasing awareness of American Deaf culture and general American culture. Prereq. ASL 4600 or instructor's permission.

ASL 4800 American Sign Language Interpreting Seminar (formerly ASL 4507-ASL 4510 American Sign Language Interpreting Seminars) (I q.h.) Short-term training opportunities for currently practicing sign language interpreters, scheduled for two Saturdays each fall, winter, and spring quarter. Because the topics or skill areas addressed change from quarter to quarter, students may take this course repeatedly for credit. Limited enrollment. For topic information, call American Sign Language Programs, 617-373-3064 or TTY 617-373-3067.

ASL 4801 Advanced Tutorial in ASL 1 (4 q.h.)

Opportunity for qualified student to take a required upper-level ASL course as a tutorial when it is not available in the usual format. See page 24 for details.

ASL 4802 Advanced Tutorial in ASL 2 (4 q.h.) See ASL 4801.

ASL 4803 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details.

ASL 4804 Independent Study 2 (3 q.h.) See ASL 4803.

ASL 4805 Independent Study 3 (3 q.h.) See ASL 4803.

BIOLOGY

BIO 4103 Biology 1 (Principles) (4 q.h.) This course provides an introduction to a variety of biological concepts. Plant and animal characteristics are surveyed through comparisons of cell structure and function. Specific topics include: Cytology, Histology, Physiology, Genetics, Cellular respiration, and Botany. To receive credit for this course, you must also register for BIO 4153, Lab for Biology 1. (Laboratory fee.)

BIO 4104 Biology 2 (Diversity) (4 q.h.) Experience the diversity of life through a systematic survey of organisms. Beginning with unicellular algae, this course follows the major evolutionary trends leading to complex forms. Specific elements of structure, function, and natural history will be examined. To receive credit for this course, you must register for BIO 4154, Lab for Biology 2. (Laboratory fee.)

BIO 4105 Biology 3 (Animal) (4 q.h.) This course provides an introduction to basic animal structure and function. The anatomy of each body system is described. Physiological processes such as hormonal control, nerve impulse transmission, muscular contraction, and the immune response are introduced. In order to receive credit for this course, you must register for BIO 4155, Lab for Biology 3. (Laboratory fee.)

BIO 4125 Biology of AIDS (3 q.h.)
This course will explore the biological aspects of AIDS in order to understand the complexities inherent in finding a cure. Topics include: the origins of the disease; the destruction of the immune system; factors influencing the pathogenesis of HIV in AIDS and modes of transmission. The epidemiology and projected spread as well as the medical aspects of current treatment modalities will be discussed.

BIO 4133 Special Topics in Botany* (3 q.h.) Topics covered: How botany impacts human life and society; current genetic manipulation of agricultural plants; historical role of plants in pharmacology; the role of plants and agriculture in the cultural evolution of man (nomad to farmer); botany in literature and poetry.

BIO 4175 Human Anatomy and Physiology 1 (3 q.h.)

Human regional anatomy. Topics include terminology and basic gross organization of the body, functional anatomy of the musculoskeletal system, thoracic and abdominopelvic splanchrology and angiology, and an overview of head and neck anatomy. The laboratory is concerned with the study of the human skeleton and appropriate dissections. The required laboratory is BIO 4195, Lab for Human Anatomy and Physiology 1. (Laboratory fee.) Although there is no prereq., prior coursework in general biology is recommended.

BIO 4176 Human Anatomy and Physiology 2 (3 q.h.)

Properties of cell membranes; functional anatomy and physiology of the nervous system; contraction of muscle; special senses; endocrinology. The laboratory includes membrane physiology, gross and microscopic anatomy of the nervous and endocrine system and testing of somatic and special senses. The required laboratory is BIO 4196, Lab for Human Anatomy and Physiology 2. (Laboratory fee.) Prereq. BIO 4175 or equivalent is recommended.

BIO 4177 Human Anatomy and Physiology 3 (3 q.h.)

Functional anatomy and physiology of the respiratory, cardiovascular, digestive, urinary, and reproductive systems; fetal development. The laboratory deals with the microscopic anatomy and physiology of these systems. Demonstration material is presented for the study of the reproductive system and its development. The required laboratory is BIO 4197, Lab for Human Anatomy and Physiology 3. (Laboratory fee.) Prereq. BIO 4176 or equiv.

BIO 4178 Anatomy and Physiology A (4 q.h.) (Registration restricted to paramedic students.)

Human anatomy and physiology. Describes the cell and its physiology, the structure of tissues, the anatomy and physiology of the cardiovascular system and blood, the respiratory system, and the urinary system. The required laboratory is BIO 4198, Lab for Anatomy and Physiology A. (Laboratory fee.) BIO 4178 and BIO 4179 may not be substituted for BIO 4175, 4176, 4177.

^{*}Not offered every year. Call 617-373-2818 for availability.

BIO 4179 Anatomy and Physiology B

(4 q.h.) (Registration restricted to paramedic

students.)

Continuation of BIO 4178. Describes the anatomy and physiology of the nervous system, skeletomuscular system, digestive system, endocrine and reproductive systems. The required laboratory is BIO 4199, Lab for Anatomy and Physiology B. (Laboratory fee.) Prereq. BIO 4178. BIO 4178 and BIO 4179 may not be substituted for BIO 4175, 4176 and 4177.

BIO 4190 Microbiology 1 (3 q.h.)

Morphology and biochemistry of bacteria. The required laboratory is BIO 4200, Lab for Microbiology 1. (Laboratory fee.) Prereq. BIO 4105 or equiv.

BIO 4191 Microbiology 2 (3 q.h.)

Survey of pathogenic microorganisms. The required laboratory is BIO 4201, Lab for Microbiology 2. (Laboratory fee.) Prereq. BIO 4190 or equiv.

BIO 4192 Microbiology 3 (3 q.h.)

Examination of the characteristics and role of microorganisms in the environment. The required laboratory is BIO 4202, Lab for Microbiology 3. (Laboratory fee.) Prereq. BIO 4191 or equiv.

BIO 4224 Ecology 1 (3 q.h.)

Introduction to the concept of limiting factors, biogeochemical cycles, trophic levels and energy transfer and their relationship to the structure and function of populations, species, communities and ecosystems. *Prereq. Knowledge of General Biology*.

BIO 4225 Ecology 2 (3 q.h.)

Principles applied to aquatic systems with special references to physicochemical factors, typical habitats and communities. Eutrophication and toxic chemical groundwater pollution, as well as air pollution, the greenhouse effect and ozone depletion are considered. *Prereq. BIO* 4224 or equiv.

BIO 4226 Ecology 3 (3 q.h.)

Fundamentals of pests, pest control and pesticides. Study of wild plant, animal, energy, mineral and land resources with an introduction to the economics and politics of the environment. *Prereq. BIO 4225 or equiv.*

BIO 4235 Genetics 1 (3 q.h.)

Topics include nucleic acid structure, replication of genetic materials, mitosis, meiosis, and Mendelian inheritance. *Prereq. BIO* 4103.

BIO 4236 Genetics 2 (3 q.h.)

Examination of mutation, regulation of gene expression, population genetics, engineering, and genetics of bacteria and viruses. *Prereq. BIO* 4235.

BIO 4237 Genetics Laboratory (2 q.h.) Laboratory exercises involving principles of Mendelian inheritance, linkage, and crossing-over. Classical genetics utilizing Drosophila; biochemical studies utilizing Neurospora and E. coli. (Laboratory fee.) Prereq. BIO 4236 or equiv.

BIO 4246 Cell Biology 1 (3 q.h.)

Chemical composition, structure of cells and organelles, transport processes, cell motion and excitability, and growth. *Prereq. BIO 4103, and CHM 4113 or equiv.*

BIO 4247 Cell Biology 2 (3 q.h.)

Cellular energy supply, enzyme function, respiration and metabolism, photosynthesis and other synthetic pathways, and control of cellular processes. *Prereq. BIO 4246 or equiv.*

BIO 4248 Cell Biology Laboratory (2 q.h.) Laboratory techniques in cell biology, microscopy, structure and chemical composition of cells, enzyme measurements, photosynthesis, respiration, active transport, and growth. (Laboratory fee.) Prereq. BIO 4247 or equiv.

BIO 4258 Advanced Human Physiology 1

(3 q.h.)

Study of human physiology emphasizing cellular processes and underlying organ functions and the interactions and control of organ systems. Selected physiological topics are considered as time allows. Prereq. General Biology or permission of the instructor.

BIO 4259 Advanced Human Physiology 2

(3 q.h.)

Cardiovascular considerations; the immune system; the AIDS problem; biological control mechanisms; selected endocrine topics. *Prereq. BIO* 4258.

BIO 4260 Cell, Tissue and Organ Culture

(3 q.h.)

General principles and technique of tissue culture and preservation. The behavior of cells in culture, cell lines and relevant media are discussed. Methodology of animal and plant culture and its use in virology, cancer research and radiobiology. Prereq. Cell Biology or permission of instructor.

BIO 4300 Computer Applications in Science (3 q.h.)

Research science stands to gain from various programming applications specifically geared towards its needs. A scientist faced with a problem requiring repeated calculations must decide whether to purchase a software package, if available, to be used by specifying the parameters to fit a particular problem or to write a specific program that is completely tailored to his/her research area. Both cases require the scientist to know about computer systems and programming. This course introduces students to mainframe VAX/VMSBASIC, and covers programming techniques suited to solving scientific problems. It is designed to cover topic areas appropriate for an introductory course on various program applications in science. *Prereq.* experience with computers.

BIO 4320 Medical Microbiology (4 q.h.) (Summer Quarter only) Major characteristics of disease-producing organisms. The required laboratory is BIO 4330, Lab for Medical Microbiology (Laboratory fee), which generally meets on a different night. Prereq. BIO 4192 or professional laboratory experience in bacteriology.

BIO 4321 Soil Microbiology (3 q.h.)

An overview of the major groups of microorganisms in the soil environment, their description, abundance, significance and function. Discussion of the major transformations mediated by these organisms. Ecological relationships among microflora, soilborne pathogens and higher plants; the rhizosphere; production of antibiotics and other secondary metabolites; pesticides; metabolism of recalcitrant molecules.

BIO 4374 Histology 1 (3 q.h.)

Examination of cell structure and tissue organization, including epithelium, muscle, and connective tissue. Also covers cartilage, bone, and nervous system. The required laboratory is BIO 4384, Lab for Histology 1. (Laboratory fee.) Prereq. BIO 4175 or permission of instructor.

BIO 4375 Histology 2 (3 q.h.)

Examination of the brain, blood, skin, cardiovascular and lymphatic systems, as well as the gastrointestinal system, including the oral cavity, GI tract, liver, and gall bladder. The required laboratory is BIO 4385, Lab for Histology 2. (Laboratory fee.) Prereq. BIO 4374 or permission of instructor.

BIO 4376 Histology 3 (3 q.h.)

Examination of the respiratory, urinary, and male and female reproductive systems, as well as the endocrine glands and the eyes and ears. The required laboratory is BIO 4386, Lab for Histology 3. (Laboratory fee.) Prereq. BIO 4375 or permission of instructor.

BIO 4411 Embryology and Development 1

(3 q.h.)

Topics include gametogenesis, reproductive physiology, fertilization, blastulation, gastrulation, and early embryogenesis. Required laboratory BIO 4421, emphasizes invertebrate and amphibian embryology. (Laboratory fee.) Prereq. BIO 4374 or equiv.

BIO 4412 Embryology and Development 2

(3 q.h.)

Topics include morphogenesis and pattern formation, placentation, and organogenesis. Required laboratory BIO 4422, emphasizes chick and pig embryology. (Laboratory fee.) Prereq. BIO 4411 or equiv.

BIO 4425 Endocrinology (3 q.h.)

Organization of the human endocrine system and the mechanisms of action of the secreted hormones will be reviewed. The course will emphasize the role of the endocrine system in the integration of human physiology. Physiological disorders associated with abnormal endocrine function will be discussed. *Prereq. BIO 4105 General Biology or equiv.*

BIO 4441 Parasitology (4 q.h.)

(Spring Quarter only) Parasitic organisms, particularly those affecting humans and domestic animals, and their life cycles, modes of transmission, and diagnosis and treatment. Includes microscopic examination of prepared and live material. The required laboratory is BIO 4451, Lab for Parasitology. (Laboratory fee.) Prereq. BIO 4103 or instructor's permission.

BIO 4455 Introduction to Biotechnology

(3 q.h.)

Examines the historical development, basic technologies, and commercial potential of biotechnology. Basic biological concepts are first reviewed including the steps leading to

the 20th century revolution in molecular and cell biology. The technology of recombinant DNA, monoclonal antibody production, and nucleic acid probe development are outlined along with their therapeutic, diagnostic, and experimental uses. Newer, emerging technologies and applications are discussed where appropriate. The commercial state-of-the-art and its developmental marketing problems are included. Prereq. one year each, college-level chemistry and biology, or permission of instructor.

BIO 4461 Immunology (4 q.h.)

Biological, chemical, and physical attributes of antigens and antibodies, together with their serological interactions. *Presentation of the material will be by lecture and demonstration*. *Prereq. BIO 4191, CHM 4263 or equiv.*

BIO 4501 Development of New Virus Vaccines (3 q.h.)

Biological and molecular properties of viruses are integrated with recombinant DNA technology to probe current strategies in viral vaccine development. The genomic organization, virion structure and viral pathogenesis of medically relevant diseases will be discussed. Material is presented on the basis of specific examples from current literature. Emphasis on factual knowledge coupled with an understanding of experimental design and data analysis. *Prereq. BIO 4103 or instructor's permission*.

BIO 4600 Scanning Electron Microscopy (4 q.h.)

Designed for laboratory personnel in the life sciences, medical, and biotechnology fields with no formal training in electron microscopy. This course offers practical, comprehensive instruction in the theory and practice of scanning electron microscopy (SEM). Topics to be covered include: design and operation of the SEM; beam/specimen interactions; applications of SEM in sciences and industry; and current advances in SEM technology. Laboratory exercises will provide a working knowledge of specimen preparation through basic photographic, darkroom procedures and the publication of quality electron micrographs. (Laboratory fee.) Class limited to 12 students. Prereq. Laboratory experience.

BIO 4601 Transmission Electron

Microscopy (4 q.h.)

Designed for laboratory personnel in the sciences, medical, and biotechnical fields with

no formal training in electron microscopy. This course offers practical, comprehensive instruction in the theory and practice of transmission electron microscopy (TEM). Topics to be covered include: design and operation of the TEM; electron optics; quantitative and localization techniques; and electron micrograph interpretation. Laboratory exercises will emphasize routine specimen preparation, TEM operation and maintenance and production of electron micrographs. (Laboratory fee.) Limited to 12 students. Prereq. Laboratory experience.

BIO 4602 Principles of Light Microscopy and Histotechnique (4 q.h.)

This course is designed to instruct life science, medical, and biotechnology students in the fundamental principles of light microscopy, and its application in biological research. The framework of this course will involve a standard histological approach to specimen preparation, including: chemical fixation, paraffin embedding, sectioning and staining. Upon this framework more specialized techniques such as cryo-sectioning and fluorescence microscopy will be introduced. Finally the student will be exposed to advanced techniques and emerging technologies in light microscopy. (Laboratory fee.) Prereq. Laboratory experience.

BIO 4700 Advanced Tutorial 1 (4 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

BIO 4701 Advanced Tutorial 2 (4 q.h.) See BIO 4700.

BIO 4801 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq.* 96 q.h. and 3.0 q.p.a.

BIO 4802 Independent Study 2 (3 q.h.) See BIO 4801.

BUSINESS LAW

BL 4101 Law 1 (3 q.h.)

Introduction to the legal system. Study of the nature, formation, and essential elements of contracts, including performance and remedies for breach. Also covers agency law, including the rights and duties of principal and agent, the scope of authority, and relationships to third persons.

BL 4102 Law 2 (3 q.h.)

Sales as governed by the Uniform Commercial Code, including the law of warranty, business organizations, partnerships, corporations, and other important business forms. *Prereq. BL 4101*.

BL 4103 Law 3 (3 q.h.)

Commercial paper, the function of negotiability, bank checks and promissory notes, real property, personal property, bailments, bankruptcy, and secured transactions. *Prereq. BL 4102*.

BL 4105 Law (Intensive) (6 q.h.) Same as BL 4101 and BL 4102.

BL 4110 Law for Managers (3 q.h.)

Study of legal problems for managers including rights and duties in the employment relationship, acquisition of computer software and hardware, effective use of legal counsel, personal liability issues for managers, credit and collection law, and other selected topics of interest.

BL4115 Law and Social Issues (3 q.h.) Structure and dynamics of the American legal system through analysis of selected cases dealing with social issues.

BL 4120 Law for Personal Planning (3 q.h.) Legal aspects of personal and family planning, including consumer rights, wills and estate planning, marital law, real estate purchase, tenants' rights, and other selected topics of interest.

BL 4315 The Business of Sports Law (3 q.h.) This course examines contracts, the legal system and intercollegiate athletics. Topics include intercollegiate athletic opportunities for women and sex discrimination, television and the media in sports, issues in turning professional, drug testing, trademark law and legal considerations involving violence, gambling, taxes and anti-trust law.

BL 4316 International Business Law (3 q.h.) Surveys the leading principles in international business law as applied in decisions of domestic and international courts; the sources, development and authority of international business law, such as the laws of the European Common Market; and the making, interpretation and enforcement of treaties, and the organization and jurisdiction of international tribunals.

CAREER DEVELOPMENT

CD 4100 Managing Career Decisions (formerly INT 4110) (3 q.h.)

Understanding the importance of taking control of one's life and career decisions. Students complete a self-assessment including an evaluation of skills and competencies, values, interests, and personal style. Students explore a variety of career options both through library research and field surveys. Emphasis on decision-making, goal setting, and implementing career and educational plans. Overview of job campaign includes introduction to resume preparation, network development, and interviewing techniques.

CD 4102 Career Decision Making (formerly

INT 4114) (1 q.h.)

For students who are unclear about career direction. A day-long session intended to help students develop self understanding which is the basis of sound career decisions. Through individual and group activities participants will identify their skills and interests, and address personality and lifestyle preferences. Students will be introduced to a decision-making model and given an opportunity to develop a preliminary action play by identifying next steps for themselves in the career development process.

CD 4103 Exploring Career and Market

Trends (1 q.h.)

Session One will provide an overview of the workplace and current market trends and introduce students to resources for researching economic indicators and occupational alternatives. Informational interviewing will be presented and students will have an opportunity to practice interviewing skills. Between sessions, students will complete library research on one economic trend and one career alternative and conduct informational interviews in a career area of interest to them. In Session Two, students will participate in an "economic summit" and present the results of their career research.

CD 4104 Career Planning/Self-Marketing (formerly INT 4112) (1 q.h.)

For students who are clear about direction and preparing for a job search campaign. A day-long session intended to help students sharpen their job hunting skills for today's

economy. In the morning, students will develop effective strategies for job searching in today's market. Particular attention will be given to developing and using a network of professional contacts. Job search correspondence, including resumes and cover letters, will be reviewed. In the afternoon, students will develop a presentation statement. Interviewing skills will also be covered, with special attention given to preparing for interviews, handling different questions, and negotiating salary and benefits. Finally, students will set realistic goals for their job search and develop an action plan to meet those goals.

CD 4105 Succeeding in the Workplace (1 q.h.)

This course will provide information on the cultures of organizations and techniques for evaluating work environments. Aimed at students who have successfully landed a new job, the course will address appropriate behaviors for professionals in the workplace. Topics of discussion will include fitting into a new organization, developing good work habits, building relationships with your boss and colleagues, and establishing credibility. Building skills in team collaboration, communication, and problem-solving will be emphasized. Sexual harassment, substance abuse, and other potential workplace problems will also be discussed.

CD 4110 Women's Issues in the Workplace

This course is to enable participants to identify and overcome gender bias in the workplace. The initial lecture-discussion will work to identify experienced and perceived roadblocks that class members find to be limiting their career progress. Among the topics discussed will be glass ceilings, glass walls, sex role stereotypes, fear of failure, need for approval, and work inhibitions as they affect career progress and job searches. As an assignment, each participant will prepare a paper on their experiences with particular problems and develop strategies and options for overcoming these. Part Two of the course will explore material elicited by the homework and focus on ways of developing self-esteem and assertiveness in the workplace. Proactive planning will be emphasized as an empowering tool.

CD 4112 Building An International Career (1 q.h.)

Session One will provide an overview of the world market place, the most typical patterns of building an international career, the main employment sectors and the essentials in approaching the job market in other countries. Emphasis will be placed on thorough research techniques plus strategies for effective networking. Between sessions students will conduct independent research, including informational interviews, and will write a report to demonstrate the research process and to summarize at least one viable plan of action that targets a specific industry in another country. In Session Two the students will present their plans, the instructor will provide industry specific perspectives, and the group will provide feedback.

CD 4114 Topics in Business (1 q.h.)

The first session will overview facets of starting and operating a cart business and includes determining what product to sell, choosing a location, negotiating a lease, hiring staff, licensing, and marketing. Participants will be introduced to the business plan and its importance in the success of a business. The focus of session two will be on business plan development, culminating with class members sharing their business plans and developing action plans necessary for success.

CD 4117 The Business of Consulting 1

(3 q.h.)

Provides the essential elements for establishing a successful consultant enterprise. Introduces and examines an inventory of skills, aptitudes and experience required by the prospective consultant and provides an opportunity to analyze his/her potential for success. Explores effective marketing strat-

CD 4118 The Business of Consulting 2

(3 q.h.)

Continues to explore the establishing, managing and operating of a consulting business. Expands on the strategies and methodologies used by consultants in conducting client assignments and sharpens the focus toward operating in major industries. Examines the differences in conducting client assignments in the public, private, industrial, service, and nonprofit sectors. Develops strategies for applying consulting techniques to international markets.

CHEMISTRY

CHM 4105 Chemistry and the Environment (3 q.h.)

Fundamental chemical principles, using examples from the geochemical and the internal environments of human beings as well as the home, the farm, and the workplace. No laboratory required.

CHM 4130 Chemical Principles 1 (4 q.h.) Fundamental chemistry concepts, such as symbols, formulas, equations, atomic weights, and calculations based on equations. Also covers gases, liquids, solutions, and ionization. Examples and problems are used to develop these concepts. The required laboratory is CHM 4137, Lab for Chemical Principles 1. (Laboratory fee.) Prereg. MTH 4112 or equiv. (can be taken concurrently). Not open to students who completed CHM 4111.

CHM 4131 Chemical Principles 2 (4 q.h.) Atomic structure, bonding, molecular structure, oxidation and reduction reactions, and equilibrium and kinetics. Examples and problems are used to develop these concepts. The required laboratory is CHM 4138, Lab for Chemical Principles 2.* (Laboratory fee.) Prereq. CHM 4130 or equiv. Not open to students who completed CHM 4112.

CHM 4132 Chemical Principles 3 (4 q.h.) Thermochemistry and electrochemistry acids, bases, and solubility products, nuclear chemistry, introductory organic chemistry, and biochemistry. Examples and problems are used to develop these concepts. The required lab is CHM 4139, Lab for Chemical Principles 3. (Laboratory fee.) Prereq. CHM 4131 or equiv. Not open to students who completed CHM 4113.

CHM 4221 Analytical Chemistry 1 (3 q.h.) Principles of gravimetric and titrimetric analysis (wet chemistry). Introduces statistics as applied to analytical chemistry and examines such topics as chemical equilibrium and acid-base equilibria in simple and complex systems. Gravimetric and titrimetric experiments are performed. The required laboratory is CHM 4227, Lab for Analytical Chemistry 1. (Laboratory fee.) Prereq. CHM 4132 or equiv.

CHM 4222 Analytical Chemistry 2 (3 q.h.) Continuation of CHM 4221. Covers complex formation titration, precipitation titrations, and oxidation-reduction titrations. Electrical

methods of analysis, such as potentiometry, electrolysis, coulometry, and polarography, are discussed and titrimetric analyses and experiments involving electricity are performed. The required laboratory is CHM 4228, Lab for Analytical Chemistry 2. (Laboratory fee.) Prereq. CHM 4221 or equiv.

CHM 4223 Analytical Chemistry 3 (3 q.h.) Spectrophotometry as a method of analysis, including ultraviolet, visible, infrared, and fluorescence methods; flame emission; and atomic absorption. Studies of solvent extractions and chromatographic methods of separation, such as gas-liquid chromatography and liquid chromatography. The required laboratory is CHM 4229, Lab for Analytical Chemistry 3. (Laboratory fee.) Prereq. CHM 4222 or equiv.

CHM 4224 Analytical Chemistry (4 q.h.) (Summer Quarter only) Principles and theories of volumetric, gravimetric, and instrumental analysis. Application made in the laboratory with analyses of unknown samples. The required laboratory is CHM 4226, Lab for Analytical Chemistry. (Laboratory fee.) Prereq. CHM 4132 or equiv.

CHM 4261 Organic Chemistry 1 (4 q.h.) Nature of carbon in organic compounds. General principles of structure, nomenclature, preparation, uses, and reactions of aliphatic hydrocarbons: alkanes, alkenes, alkynes, dienes, cycloalkanes. Position and geometric isomerism. Introduces free radical and ionic mechanisms of reactions. The laboratory generally deals with the preparation and properties of compounds discussed in the lecture. The required laboratory is CHM 4267, Lab for Organic Chemistry 1,* (Laboratory fee.) Prereq. CHM 4132 or equiv.

CHM 4262 Organic Chemistry 2 (4 q.h.) Structure of benzene, electrophilic aromatic substitution reactions. General principles of structure, nomenclature, preparation, uses, and reactions of the various types of organic compounds, including alcohols, alkyl and aryl halides, ethers and epoxides, and carboxylic acids. Also covers optical isomerism

^{*}Week night lectures must be taken with week night laboratories. Saturday lectures must be taken with the Saturday laboratories.

and introductory chemical kinetics. The laboratory generally deals with the preparation and properties of compounds discussed. The required laboratory is CHM 4268, Lab for Organic Chemistry 2.* (Laboratory fee.) Prereq. CHM 4261 or equiv.

CHM 4263 Organic Chemistry 3 (4 q.h.) Continuation of CHM 4262. Emphasizes the application of chemical conversions to synthetic problems. Includes functional derivatives of carboxylic acids, sulfonic acids and their derivatives, amines, diazonium compounds, phenols, aldehydes, and ketones. The laboratory generally deals with the preparation and properties of compounds discussed. The required laboratory is CHM 4269, Lab for Organic Chemistry 3.* (Laboratory fee.) Prereq. CHM 4262 or equiv.

CHM 4271 Introduction to Immunodiagnostics (3 q.h.)

Fundamentals of immunodiagnostics with emphasis on the application of principles to nursing, medical laboratory science, and biology. *Prereq. CHM 4132, BIO 4103 or equiv.*

CHM 4321 Instrumental Analysis 1 (3 q.h.) Basic theory of electrochemistry and electrochemical methods of analysis, including electrode and cell potentials, potentiometric titrations, direct potentiometry (pH meters and specification electrodes), coulometry, voltametry, polarography, electrogravimetry, and conductometric methods. Prereq. CHM 4223 or equiv. (This course may serve as preparation for certain graduate courses.)

CHM 4322 Instrumental Analysis 2 (3 q.h.) Basic theory of absorption and emission spectroscopy, including ultraviolet and visible spectroscopy, molecular fluorescence and phosphorescence, atomic absorption spectroscopy (flame, arc, spark, and plasma), and infrared and X-ray spectroscopy. Prereq. CHM 4321 or equiv. (This course may serve as preparation for certain graduate courses.)

CHM 4323 Instrumental Analysis 3 (formerly Radiochemistry) (3 q.h.)

Topics covered include: x-ray spectroscopy, radiochemical methods, and chromatographic separations. Chromatographic separations include: chromatography, high performance liquid chromatography and planar chromatography. Prereq. CHM 4322 or equiv. (This course may serve as preparation for certain graduate courses.)

CHM 4371 Biochemistry 1 (3 q.h.) Cellular organization, pH buffers; the biochemistry of amino acids, proteins, enzymes, and vitamins. *Prereg. CHM 4263 or equiv.*

CHM 4372 Biochemistry 2 (3 q.h.) Biochemistry of carbohydrates, lipids, and nucleic acids; bioenergetics; metabolism of carbohydrates. *Prereq. CHM 4371 or equiv.*

CHM 4373 Biochemistry 3 (3 q.h.) Metabolism of lipids, amino acids, and nucleotides and the biosynthesis of proteins, DNA, and RNA. *Prereq. CHM 4372 or equiv.*

CHM 4381 Physical Chemistry 1 (3 q.h.) Thermodynamics, thermochemistry, First and Second Laws, entropy, and free energy in spontaneous processes. *Prereq. CHM 4130 or MTH 4112 or equiv.*

CHM 4382 Physical Chemistry 2 (3 q.h.) Chemical equilibria, acids and bases, electrochemistry, colligative properties, phase diagrams, thermodynamics of multicomponent systems, and kinetic molecular theory. Prereq. CHM 4381 or equiv.

CHM 4383 Physical Chemistry 3 (3 q.h.) Kinetics, quantum chemistry, and photochemistry. *Prereq. CHM 4382 or equiv.*

CHM 4391 Introduction to Recombinant DNA Technology (3 q.h.)

Principles of gene manipulation in bacteria and yeasts. Principles and methods of gene cloning and splicing. *Prereq. Microbiology or permission of instructor*.

CHM 4392 Biomolecular Separation (formerly Affinity Chromatography) (3 q.h.) Principles and practice of affinity chromatography as utilized in separation and purification of biomolecules. The required laboratory is CHM 4394, Lab for Biomolecular Separations. (Laboratory fee.) Prereq. CHM 4263 or equiv.

CHM 4700 Advanced Tutorial 1 (4 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

CHM 4701 Advanced Tutorial 2 (3 q.h.) See CHM 4700.

CHM 4801 Independent Study 1 (3 q.h.) Opportunity to take special research. See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

^{*}Week night lectures must be taken with week night laboratories. Saturday lectures must be taken with the Saturday laboratories.

CRIMINAL JUSTICE

CJ 4101 Administration of Criminal Justice

(3 q.h.)

Survey of the contemporary criminal justice system from initial contact with the offender through prosecution, disposition, incarceration, and release to the community. Emphasis on major systems of social control: police, corrections, juvenile justice, mental health systems, and their policies and practices relative to the offender. Legal, empirical, and sociological materials covered.

CJ 4103 Criminology 1 (3 q.h.)

Classical and contemporary criminological theories. Examines their historical development and empirical bases, as well as their significance to the criminal justice process and the rehabilitation/deterrence/ punishment of offenders.

CJ 4104 Criminology 2 (formerly Dimen-

sions of Crime) (3 q.h.)

An examination of empirical knowledge about: the magnitude of the crime problem in the United States; characteristics of those who commit crimes; information about dangerous repeat offenders; characteristics of victims; and financial costs of crime to neighborhoods and communities. Assessment of the strengths and weaknesses of current crime measurement techniques, especially the Uniform Crime Reports and victimization surveys.

CJ 4106 Criminal Justice Research (3 q.h.) A survey of methods for basic and applied research in criminal justice, combining statistic and research methods. Examines research techniques in criminal justice including interviews, questionnaires, observations, and scales for survey analysis. Issues of measurement and casual reasoning examined in regard to criminal justice research.

CJ 4107 Criminal Justice Statistics (formerly Criminal Justice Research 2) (3 q.h.)

Focuses on the uses of statistics, with special reference to use of data from the field of criminal justice. Covers basic descriptive statistics, including measures of central tendency, tests of significance, probability, sampling, and methods of forecasting. Concentrates on research application by stressing discussion of the general role of research in the discipline and specific contributions advanced by studies in the field.

CJ 4108 Criminal Law and Procedure 1

(3 q.h.)

Examination of the concepts, responsibilities, and liabilities of criminal law and procedure. Reviews the evolution of the criminal law system. Topics include an analysis of substantive criminal law and the procedural process, as well as basic definitions; discussions of interaction between federal and state constitutions as they relate to criminal law.

CJ 4109 Criminal Law and Procedure 2

(3 g.h.)

Application of vital constitutional and statutory concepts, including selected statutory crimes, law of arrest, right to counsel, search and seizure, and applicable criminal procedures. Students are expected to be familiar with basic concepts as well as changing interpretations so that they can cite cases to support their conclusions. *Prereq. CJ 4108*.

CJ 4110 Constitutional Law (3 q.h.) The history and development of the U.S. Constitution and Amendments using text commentary and case analysis. Topics include the Commerce Clause, procedural due process, state's rights, individual rights and civil liberties, the concept of federal supremacy, and state constitutions. *Prereq. CJ* 4109.

CJ 4114 Introduction to Law 1 (3 q.h.) Provides an introduction to the law and the legal system of the United States. Sets forth the fundamentals of our legal process and provides a summary description of both the private and public law system. Presents an overview of the traditional structure, as well as the basic principles of law.

CJ 4115 Introduction to Law 2 (3 q.h.) Continues the material presented in CJ 4114. Introduces basic tort and contract principles, administrative law, and governmental regulation of business, topics of particular concern to criminal justice professionals in both the public and private sectors, as well as to those students concentrating in legal studies. *Prereq. CJ 4114*.

CJ 4118 Juvenile Law (3 q.h.)
Introduces students to the fundamental case law and theory of Juvenile Law. Students study care and protection cases (commonly called abuse and neglect cases); delinquency proceedings; status offense cases, and transfer/waiver cases.

CJ 4201 Criminal Investigation 1 (3 q.h.) The evolution of contemporary investigative techniques. Topics include investigative effectiveness and organization, and modern investigative techniques, especially as they relate to particular crimes such as arson, sexual offenses, larceny, burglary, robbery, forgery, and homicide.

CJ 4202 Criminal Investigation 2 (3 q.h.) Continuation of Criminal Investigation 1. Focuses on staffing the investigation unit, informational management, control of evidence, establishment of investigative priorities, fiscal restraints, and the relationship between criminal investigation and patrol and special units. Examines special police operations such as electronic surveillance, raids, and undercover operations; affidavit construction, court preparation, and the use of scientific methods; and Federal law with regard to due process and other constitutional protections. *Prereq. CJ 4201*.

CJ 4203 Criminalistics 1 (3 q.h.)
Survey of the elements of microscopy, spectroscopy, and basic chemistry as they apply to the study of materials that comprise physical evidence. Covers the procedures for searching, sketching, and photographing crime scenes as well as the recognition, collection, marking, and handling of physical evidence, emphasizing the importance of maintaining the chemical integrity of each sample. Studies the types of analysis, their value and limitations with regard to glass, soil, hairs and fibers, firearms, toolmarks,

and questioned documents.

CJ 4204 Criminalistics 2 (3 q.h.) An introduction to the analysis of biological items of physical evidence collected at the scene of the crime or submitted for laboratory examination, and to the fields of serology and toxicology. Covers methods of collecting samples and the value of blood distribution patterns, as well as laboratory techniques used to identify and characterize blood stains and other body fluids. Pharmacology and toxicology of medical and chemical substances having potential for misuse and abuse are studied. Includes laboratory demonstrations and practical exercises to examine types of physical evidence, including gunshot residue, paints and polymers, and arson and explosive residues. Prereq. CJ 4203.

CJ 4205 Patrol Theory and Administration 1 (3 q.h.)

History of the evolution of patrol practices; the changing patrol function over time; the history of patrol management and supervision; the development of preventive patrol and rapid response to calls for service; theories of patrol allocation; the influence of operations research; the development of community relations as an adjunct to patrol.

CJ 4206 Patrol Theory and Administration 2

Contemporary patrol developments and functioning: directed patrol, team and community policing, the re-emergence of foot patrol, the legacy of community relations; neighborhood beat construction, patrol management and supervision; and current patrol research. *Prereq. CJ* 4205.

CJ 4207 Comparative Police Systems (3 q.h.)

Comparative study of police systems in Anglo-Saxon, Continental, Asian, Russian, African, and other cultural traditions with focus on the influence of nineteenth-century English and twentieth-century American police traditions on policing systems in other cultures and countries.

CJ 4209 Police Management 1 (3 q.h.) Introduction to the philosophy and theories of management in policing. Historical view of the development of "professional/bureaucratic" managerial approach in policing. The development of organizational strategy; and understanding and managing the external environment within which police operate.

CJ 4210 Police Management 2 (3 q.h.) Internal management of police organizations: policy development, implementation, maintenance of ongoing operations, and evaluation of program outcomes.

CJ 4211 Police and Social Problems (3 q.h.) Investigation of police functioning with regard to contemporary social problems: drugs, prostitution, domestic assault, gangs, serial murderers, dangerous offenders, illegal aliens, and others, with a special focus on related research into police functioning.

CJ 4212 Police Community Relations (3 q.h.)

The role and function of police with both individuals and groups, including minority groups; police responsibilities regarding civil rights, civil disorders, and public protection.

CJ 4301 American Correctional System

(3 q.h.)

A critical analysis of the American system of corrections. Covers important historical developments and the range of treatment and/or punishment options available to government, including prisons, jails, reformatories and community treatment programs. Probation and parole are considered as an integral part of corrections. Current correctional philosophy and treatment approaches on federal, state, and local levels of government are assessed. The interrelated nature of all aspects of corrections is emphasized, with particular focus on policy analysis and decisionmaking.

CJ 4302 Correctional Administration 1

(3 q.h.)

An intensive examination of the American correctional process. Programs, services, standards, methods of service delivery, and contracting procedures are analyzed. Critical issues in personnel administration and management are discussed, as are the allocation of scarce resources and staff development and training programs. Stresses motivation, productivity, and accountability in corrections and the role of community outreach and interface programs and volunteer services. *Prereq. CJ* 4301.

CJ 4303 Correctional Administration 2 (3 q.h.)

Continuation of intensive examination of the correctional process, with focus on special problems facing correctional administrators. Topics include the management of offenders with special needs (dangerous and/or violent offenders and inmates with histories of substance abuse); management and control of prison violence; and preventive techniques and programs. Also explored are institutional management of illegal immigrants and other special prisoners, as well as the special needs of female offenders. *Prereq. CJ* 4302.

CJ 4304 Jail Administration and

Management (3 q.h.)

Study of local adult correctional institutions ranging from police lock-ups to jails and houses of corrections. Topics include administrative, management, and security issues; intake, regional, and network approaches; local versus state control; offender classification, programs, residential care, inspection, and standards; pretrial detention; staffing

patterns; interface with courts and law enforcement; release programs; emergency management; and suicide prevention.

CJ 4305 Case Management and Correctional

Services (3 q.h.)

An overview of treatment and rehabilitative work conducted in jail and prison environments. Basic counseling concepts and techniques, individual and group therapy, and institutional services are discussed. Case studies and class projects used to illustrate offender and inmate management in a variety of settings. Students study a range of innovative approaches in corrections and assess their fiscal and personnel requirements and effectiveness. *Prereq. CJ* 4301.

CJ 4310 Community Corrections (3 q.h.) The concept of community corrections from historical, philosophical, and pragmatic perspectives, and analysis of program options serving as alternatives to imprisonment or institutionalization. Discussions of program activities range from work and study release programs, family visiting furloughs, community-based correctional efforts aimed at helping offenders become law-abiding citizens. Topical issues include private and public programs, control and surveillance issues, residential and non-residential programs, marshalling and coordinating community resources, and volunteer involvement. Program and cost-effectiveness of community corrections, community safety, and managerial issues are also discussed. Prereq. CJ 4301.

CJ 4311 Probation and Parole (3 q.h.)

Introduction to probation and parole as dispositions, systems or subsystems, processes, and offender statuses. Includes the history of probation and parole, their conditions and revocation procedures, offender eligibility requirements, supervision styles, due process issues, and prediction and measurements of effectiveness. The role of volunteers, and probation and parole officer responsibilities are also discussed. Introduces students to presentence investigations, shock probation, probation subsidy, expansion of probation into pretrial and restitution programs, and to current debates on the governmental framework of probation and parole, parole boards, and parole hearings. Prereq. CJ 4301.

CJ 4403 Introduction to Security (3 q.h.)
The organization and administration of security and loss prevention programs in industry, business, and government. Emphasizes the protection of assets, personnel, and facilities, and the relations between security organizations and government agencies.

CJ 4404 Industrial Safety and Fire Prevention (3 q.h.)

Problems, methods, and technology in establishing safe working environments. Emphasizes the prevention of accidents and the effects of natural disasters with special focus on hazardous substance risks. *Prereq. CJ 4403*.

CJ 4406 Security Administration 1 (3 q.h.) The historical basis of the security management function and the development of the field in general and its various specialties. Examines concepts of organizational security and risk-management methods. *Prereq. CJ* 4403.

CJ 4407 Security Administration 2 (3 q.h.) Organization, administration, and management of the security function, including the systems approach to security operations. Focuses on planning, organizing, staffing, directing, controlling, representing and innovating. The manager's responsibility is also explored.

CJ 4408 Legal Aspects of Security Management and Operations (3 q.h.)

Provides a comprehensive examination of the legal environment and issues impacting security operations and management. Elements of criminal, civil, property, regulatory, and business law are analyzed from the perspective of organizational security management concerns. Includes legal basis of security practices, civil liability, corporate security, investigations, labor law, industrial espionage, governmental security issues, and other relevant topics. *Prereq. CJ* 4403.

CJ 4411 Electronic Information Security (3 q.h.)

Survey of the complex and developing security problems inherent in the use of electronic information systems. Provides a comprehensive examination of the management methods and technology used to counter the security risks related to the use of computers, word processers, and other communication devices and methods. *Prereq. CJ 4101*.

CJ 4412 Computer Crime and Security (3 q.h.)

This course is designed to introduce crimes involving the use of computers, the Federal and State laws addressing them and the preventative and investigative methods used to secure computers, defend and prosecute offenders. Reviewing and discussion of actual case studies and investigative experiences will be covered with an overall focus on security and investigative problems associated with computer crime. *Prereg. COM*

CJ 4413 Industrial Security (3 q.h.)

4101.

This course consists of an examination of the ways in which prevention oriented security programs can be integrated into all phases of the research and manufacturing processes, involve line managers and supervisors, and gain executive support by introducing cost effective, operationally sound methods to protect all assets.

CJ 4415 Service Industry Security (3 q.h.) Consumer oriented activites, including such diverse businesses as the retailing and hospitality industries, are faced with the prospect of losses which can be caused by employees on one hand and the very consumers to whom they provide services on the other. This course studies the ways in which a completely integrated security function, emphasizing prevention, can contribute to an employer's profit margins.

CJ 4417 Institutional Security (3 q.h.)
Institutions, whether academic such as colleges and universities, or medical centers, not only have much in common, but also they are unique in their security requirements. This course examines the ways in which their needs can best be satisfied through the combined use of modern technology, security personnel, and the integration of the security function into all facets of

CJ 4420 Advanced Computer Applications in Criminal Justice (3 q.h.)

institutional management.

This course examines the role of computers as both a tool of law enforcement and as evidence of a crime. Building on basic computer literacy skills students will develop the necessary skills to safely and effectively analyze seized or down-loaded magnetic media, illustrate complicated criminal enterprises and the related financial transactions. Stu-

dents will utilize IBM compatible personal computers with database, spreadsheet, flow charting and presentation graphic programs to analyze and present a case study. *Prereq. COM 4101*.

CJ 4503 Forensic Laboratory (3 q.h.)

A hands-on laboratory course focusing on individual experimentation. Surveys the basic examinations and techniques performed in a crime laboratory. Topics include general microscopy, hairs and fibers, blood and other body fluids, paint, glass, soil, fingerprints, gunshot residue, toxicology, questioned documents, and firearm and toolmark examinations. (Laboratory fee.) Prereq. CJ 4203 and CJ 4204.

CJ 4504 Juvenile Justice 1 (3 q.h.)

Examination of the contemporary juvenile justice system, with focus on the key decision points within the juvenile justice system including jurisdiction, police, detention, court intake, adjudication, disposition, and aftercare. Critical issues facing the juvenile justice system components are discussed.

CJ 4505 Juvenile Justice 2 (3 q.h.)

Continuation of material discussed in CJ 4504. In particular, consideration is given to the history of juvenile justice in the U.S.; the major reforms of the juvenile justice system (diversion, the development of due process, decriminalization of status offenders, deinstitutionalization, and waiver to adult court); and future trends in juvenile justice. *Prereq. CJ 4504*.

CJ 4506 Crime Victims (3 q.h.)

Examination of current theories and research relating to victims of crime. Particular attention to special victim groups such as children, the elderly, and women. Victim interactions with the criminal justice system are explored. Current victim initiatives such as restitution, mediation, compensation, and victim rights legislation are also assessed. *Prereq. CJ 4101 and CJ 4103*.

CJ 4507 Organized Crime (3 q.h.)

The nature and problems of organized crime, its causes and effects, comparative and historic roots, and activities, organization, and economics. Considers possible solutions and the scope of techniques used in combatting organized crime.

CJ 4508 Crime Scene Investigation (3 q.h.) A competent search of a crime scene demands specialized training. This course covers certain basic considerations, guidelines, and procedures that help the crime scene technician avoid oversight, ensure thoroughness of search, and comply with both the legal and scientific pertaining to the use of physical evidence. The procedures for recording the crime scene—i.e., notetaking, sketching, and photography—as well as the basic steps that minimize the omission or contamination of evidence are studied in detail.

CJ 4509 White-Collar Crime (3 q.h.) Basic survey of white-collar crime: the nature and extent of white-collar crime, the social-psychological makeup of white-collar crime typologies, present efforts directed toward its control, and interagency and ju-

risdictional problems and the benefits of co-

CJ 4510 Terrorism (3 q.h.)

operation.

An overview of terrorism and why it has become so popular. Topics include the role of news media, political consequences of terrorism, the military as a resource, and the role of the hostage.

CJ 4511 Survey of Criminal Evidence (3 q.h.)

The fundamentals of criminal trial procedure and the rules of evidence as they apply to the trial of a criminal case. Students read and brief criminal court cases. *Prereq. CJ 4108 and CJ 4109*.

CJ 4512 Women and the Criminal Justice System (3 q.h.)

Introduction to issues relating to roles taken by women involved with the criminal justice system and to the system's various responses to women in these roles. Specific focus on women as victims of crime, as offenders, and as practitioners.

CJ 4701 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24.

CJ 4702 Independent Study 2 (3 q.h.) See CJ 4701.

CJ 4703 Independent Study 3 (3 q.h.) See CJ 4701. CJ 4805 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details.

CJ 4806 Advanced Tutorial 2 (3 q.h.) See CJ 4805.

CJ 4811 Advanced Tutorial Intensive (6 q.h.) Opportunity to take upper-level course sequence independently. See page 24 for details.

COMMUNICATION STUDIES

(formerly Speech Communication)

CMN 4101 Fundamentals of Human Communication (formerly SPC 4101 Effective Communication 1) (3 q.h.) Introduction to the development of personal communication skills with an emphasis on elements in the communication process. Includes discussion of language use, nonverbal, listening and feedback and the role each plays in communication transactions.

CMN 4102 Group Discussion (formerly SPC 4102 Effective Communication 2) (3 q.h.) Topics include small-group communication, elements of group structure, task and maintenance functions, leadership, and formalized methods of group problem-solving and decision-making.

CMN 4104 Effective Communication (Intensive) (formerly SPC 4104) (6 q.h.) Same as CMN 4101 and CMN 4102.

CMN 4105 Speaking Skills for Non-native

Speakers (3 q.h.)

A course for persons who have previously studied English but who need to develop oral communication proficiency. Following diagnostic testing, students participate in individualized and group instructional situations.

CMN 4111 Voice and Articulation (formerly

SPC 4111) (3 q.h.)

Development of the speaking voice, with emphasis on articulation, pitch control, and vocal variety and flexibility. Includes basic theory of the vocal mechanism.

CMN 4112 Advanced Voice and Articulation (formerly SPC 4112) (3 q.h.) Continuation of CMN 4111. Prereq. CMN 4111 or instructor's permission.

CMN 4150 Self-Concept and

Communication (formerly SPC 4150) (3 q.h.) Through lectures, discussions, case studies, and classroom activities, students have an opportunity to become more aware of how our attitudes and habits affect our communication with others personally and professionally. Students will explore alternative communication patterns as they apply to these settings.

CMN 4151 Listening (formerly SPC 4151)

(3 q.h.)

Analyzes listening effectiveness in professional and personal situations. Reasons for poor listening, techniques for effective listening, and giving and receiving feedback are covered.

CMN 4152 Conducting Interviews in the Professions (formerly Interviewing) (3 q.h.) Helps students apply the current theory and research of interviewing to professional contexts. Topics include selection interviews, performance appraisal interviews, information gathering, problem-solving interview and persuasive interviewing.

CMN 4153 Techniques of Persuasion

(formerly SPC 4153) (3 q.h.)

Covers communication strategies used when attempting to influence others. Examines instances of persuasion as they occur in advertising, politics, social interaction, sales, and business.

CMN 4154 Negotiation Skills (formerly

SPC 4154) (3 q.h.)

Designed to introduce students to the techniques of dispute resolution. Particular attention is paid to the processes of mediation, facilitation, and negotiation. Through readings, lectures and class activities, students will have the opportunity to explore methods of applying these skills to professional settings.

CMN 4155 Organizational Communication

(formerly SPC 4155) (3 q.h.)

An exploration of communication management within organizations. Topics include the role of communication in management, the management and control of information flow, and strategic communication planning.

CMN 4160 Communication and the Media

(formerly SPC 4160) (3 q.h.)

An overview of the structure, functions, and history of American mass media. Presents a basic understanding of the process of mass media as it intersects society in general, and the lives of individuals in particular.

CMN 4201 Argumentation (formerly SPC 4201) (3 q.h.)

Basic concepts of argumentation, such as evidence, research, and refutation, with emphasis on the psychology of the audience and various types of group discussion.

CMN 4221 Interpersonal Communication (formerly SPC 4221) $(3 \, q.h.)$

Provides students with an opportunity to develop skills and strategies necessary for developing and maintaining effective personal and professional relationships. Topics include perception, self-disclosure, emotions, attitudes and values, nonverbal communication, language, improving communication climate and methods of conflict resolution.

CMN 4225 Family Communication (formerly SPC 4225) (3 q.h.)

Introduction to how communication affects the development and maintenance of family relationships. Topics include marital, parent/child, sibling, and extended family communication patterns; problem identification and problem-solving skills in family communication.

CMN 4231 Gender Communication (formerly SPC 4231 Female/Male Communication 1) (3 q.h.)

Examines the ways in which personal and mediated communication create and sustain our understanding of gender. Includes discussion of verbal and nonverbal aspects of communication: relationships at work, with friends, and in the family.

CMN 4240 Managing Interpersonal Conflict (formerly SPC 4240) (3 q.h.) Basic concepts involved in the management of conflict in interpersonal situations, such as understanding attitudes about conflict, studying message patterns in conflict interactions, and exploring a variety of conflict resolution methods.

CMN 4251 Business and Professional Speaking (formerly SPC 4251) (3 q.h.) Covers practice in the organization and presentation of material to fit varying audiences. Emphasizes delivery techniques and effective presentation of ideas.

CMN 4252 Special Topics in Communication (3 q.h.)

Examination of a variety of subjects and themes in communication studies. Since topics change from quarter to quarter, students may take this course more than once, provided they focus on a different topic each time.

COMPUTER LITERACY

COM 4101 Foundations of Computer Literacy (4 q.h.)

Introduction to computers, including database management, word processing, systems analysis and design, software packages, artificial intelligence, and trends in specialized types of office automation. Hands-on laboratories reinforce lectures.

COUNSELING, **PSYCHOLOGY** REHABILITATION, AND SPECIAL EDUCATION

CRS 4200 Introduction to Special Education (3 q.h.)

Surveys the characteristics and the social, emotional, and educational adjustment of children and youth with special needs. Examines the effects of the disability, and of the individual's and society's attitudes toward the disability. Reviews current legislation.

DRAMA

DRA 4101 Introduction to Theatre (3 q.h.) How a theatrical performance is made through the eyes of those who make it: writers, producers, actors, designers, and audience. Designed to increase the student's awareness of theatre as a business as well as to provide a basis for enjoyment of theatre as an art form dealing with ideas and emotion. Visits to local theatres and viewing of performances in the Boston area. Guest lectures by practicing professionals. Cost of theatre tickets not included in tuition.

DRA 4120 Acting for the Non-Actor (3 q.h.) Shakespeare said "All the world's a stage... We are all actors in our private and professional lives. Basic acting principles and performance experiences can benefit anyone who interacts with other people. This course deals with stress, relaxation, presentation of self, status in relationships, and performance anxieties. Acting exercises assist the student in finding methods for dealing comfortably and positively with real-life situations.

DRA 4140 Introduction to Acting 1

(formerly Workshop for the Actor 1) (3 q.h.) Physical preparation for the actor, including basic stage movement and deportment, control of the stage voice, analysis and establishment of characterization through observation and awareness of the body, and improvisations and short scenes.

DRA 4141 Introduction to Acting 2

(formerly Workshop for the Actor 2) (3 q.h.) Psychological preparation for the actor, including analysis and establishment of characterization through memory, emotion, imagination, and recall; analysis of specific roles; the creation of a character analysis book; and improvisations and short scenes. Prereq. DRA 4140 or instructor's permission.

DRA 4142 Acting 3 (formerly Workshop for the Actor 3) (3 q.h.)

Preparing and performing the role, including the physical and psychological preparation of specific roles. Also includes short classroom scenes and the presentation of a one-act play. Prereq. DRA 4141 or instructor's permission.

DRA 4145 Auditioning for the Stage (3 q.h.) Focuses on techniques, approaches, and attitudes that assist the actor in the casting process. Preparation for and presentation of

monologues. Prereq. DRA 4142 or instructor's permission.

DRA 4150 Introductory Mime Workshop (3 q.h.)

In-depth introduction to mime, featuring illusionary technique, silent acting, and the creation of material for mime theatre.

DRA 4151 Acting for the Camera (Studio)*

(3 q.h.)

The adaptation of theatre acting techniques to the camera. In-studio experiences relative to the performer's physical and vocal persona in creating a character, developing the role and revealing the personality. On-camera involvement in short dramatic pieces. (Laboratory fee.) Prereq. DRA 4140 and 4141 or instructor's permission.

DRA 4152 Acting for Commercials (Studio)* (3 q.h.)

Understanding the "art" of movement and gesture in commercials; with commercial terminology and procedures; with manipulating commercial dialogue as well as handling the "product." In-studio/on-camera practice with commercial scripts. (Laboratory fee.) Prereq. DRA 4151 or instructor's permission.

DRA 4153 Acting for Voice Overs (Studio)*

The use of the voice for "selling" a product or service. Understanding microphone and sound booth techniques. Developing your own "voices"; analyzing commercial dialogue and speaking it effectively. (Laboratory fee.) Prereq. DRA 4152 or instructor's permission.

DRA 4154 Advanced Camera and Microphone Techniques (Studio)* (3 q.h.) This course is for the experienced actor wishing to further develop on-camera and voiceover skills for commercial and industrial performances. Classes are held in the TV Studio and all work is taped. Students will have their own tapes for personal evaluations. (Laboratory fee.) Prereq. DRA 4153 or instructor's permission.

DRA 4155 Puppetry Workshop (Studio)* (formerly Puppetry) (3 q.h.) Students will design and construct a hand

puppet and practice puppet manipulation, and will discuss and engage in writing and acting for puppet theater. The uses of puppetry past and present will be discussed. The emphasis will be on creating and performing. (Laboratory fee.)

DRA 4230 The Boston Theatre Scene (3 q.h.)

Opportunity to view and critique live performances presented in the Boston area's major and "off-Broadway" theatres. Cost of theatre tickets not included in tuition.

DRA 4250 Theatre Movement (3 q.h.)
Deals with relaxation, concentration, and the use of the body to free the emotional self.

DRA 4260 Theatre Speech (3 q.h.) Focuses on vocal technique and speech problems unique to actors performing in contemporary and classical theatre.

DRA 4815 Advanced Tutorial 1 (3 q.h.)
Opportunity to take an upper-level course independently. See page 24 for details.

DRA 4816 Advanced Tutorial 2 (3 q.h.) See DRA 4815.

ECONOMICS

ECN 4001 Overcoming Statistics Stress (noncredit)

This seminar is designed to show students how to put aside anxieties by understanding the components of statistics and developing techniques to simplify seemingly difficult word problems. Mathematical skills needed include addition, subtraction, division, multiplication, knowledge of square roots, and basic algebra.

ECN 4115 Economic Principles and Problems 1 (3 q.h.)

Application of the basic principles of economics to current public problems. Focusing on macroeconomics, students explore unemployment, inflation, national income and employment theory, and government expenditures and taxation.

ECN 4116 Economic Principles and Problems 2 (3 q.h.)

Continuation of ECN 4115, focusing on the role of the banking system, the Federal Reserve System, and supply-side policies. Topics in microeconomics include the role of a market pricing system, supply and demand, the costs of production, profits, and the supply decision. *Prereq. ECN 4115 or equiv.*

ECN 4117 Economic Principles and Problems 3 (3 q.h.)

Continuation of ECN 4116, focusing on markets and the allocation of resources. Topics include competitive markets, monopoly, oligopoly, factor markets, and income distribution. Economic principles are applied to selected problem areas, including poverty, pollution, energy, international trade, and the balance of payments. *Prereq. ECN 4116 or equiv.*

ECN 4118 Economics (Intensive) (9 q.h.) Same as ECN 4115, ECN 4116, and ECN 4117.

ECN 4130 Medical Economics (3 q.h.) Topics include health care trends in the United States; causes for increases in medical care costs; supply and training of health care personnel; the nation's need for physicians, nurses, pharmacists, and other allied health personnel; the quality of medical care; economics of health insurance plans; and consumer demand for health care, medical facilities, and professional and semiprofessional personnel.

ECN 4137 History of Economic Thought (3 q.h.)

Development of economic thought, including Mercantilism as the first economic doctrine; analysis of the older, classical school with its later refinements (Modern Marginalism) and its important critics (socialists, Marxists); and Keynesian and modern developments.

ECN 4140 Economics of Crime (3 q.h.) Theoretical and empirical analyses of the economic causes of criminal behavior. The social costs of crime, its prevention, and techniques for designing optimum law enforcement policies.

ECN 4150 Energy Economics (3 q.h.) Economic, political, and historical background of energy and other resource problems, including examination of the future impact of primary resource limitations on U.S. and world economics and feasibility studies of resource substitution.

ECN 4215 Macroeconomic Theory 1 (3 q.h.) A discussion of conceptual and empirical problems of creating and using national accounts, price index problems, conceptual and empirical evaluation of consumption and investment functions and their policy impli-

cations, multiplier and accelerator models, and recent cyclical fluctuations. Analyzes theories of inflation, unemployment, and growth in light of recent economic history. *Prereq. ECN 4117 or equiv.*

ECN 4216 Microeconomic Theory 1 (3 q.h.) Examines supply and demand analysis, various elasticity concepts and applications, theories of demand and production, and derivation of cost curves. Analyzes pricing and output behavior in several market structures. Analyzes the pricing of resources, general equilibrium and economic efficiency, and a variety of topics in microeconomics such as externalities and public goods. *Prereq. ECN* 4117 or equiv.

ECN 4217 Macroeconomic Theory 2 (3 q.h.) A continuation of ECN 4215.

ECN 4218 Microeconomic Theory 2 (3 q.h.) A continuation of ECN 4216.

ECN 4219 Macroeconomic Theory Intensive (6 q.h.)

Same as ECN 4215 and ECN 4217. Prereq. ECN 4117 or equiv.

ECN 4220 Microeconomic Theory Intensive (6 q.h.)

Same as ECN 4216 and ECN 4218. Prereq. ECN 4117 or equiv.

ECN 4221 Selected Topics in Economics (3 q.h.)

Studies in a variety of macro- and microeconomic issues. Because topics change from quarter to quarter, students may take this course more than once, provided they focus on a different topic each time.

ECN 4250 Statistics 1 (3 q.h.)

Introduction to the collection and organization of data, including the measurement, presentation, and uses of elementary set theory; measures of central tendency and variability; basic probability; and probability distributions.

ECN 4251 Statistics 2 (3 q.h.)

Sampling and basic estimation techniques, "t" distribution, testing of statistical hypotheses, and analysis of variances. *Prereq. ECN* 4250 or equiv.

ECN 4252 Statistics 3 (3 q.h.)

Methods of econometric estimation and forecasting, including linear regression analysis, correlation analysis, time series analysis, and index numbers. *Prereq. ECN 4251 or equiv.* ECN 4253 Statistics Intensive A (formerly Statistics Intensive) (9 q.h.)
Same as ECN 4250, ECN 4251, and ECN 4252.

ECN 4254 Statistics Intensive B (6 q.h.) Same as ECN 4250 and ECN 4251.

ECN 4255 Hands-On Statistics (4 q.h.) Statistics techniques and applications, including frequency distributions, measures of central tendency, measures of dispersion, probability and probability distributions, and sampling and estimation techniques. Class time is divided equally into lecture and laboratory; the latter focuses on individual, supervised problem-solving. Not open to students who have taken ECN 4250.

ECN 4310 Labor Economics (3 q.h.) Economic analysis of the labor market, including the labor force, the demand for labor, and the institutions and policies dealing with them. Examines employment, unemployment, wage determination, and the development and efficient use of labor resources as well as collective bargaining issues and their economic consequences. *Prereq. ECN* 4117 or equiv.

ECN 4311 Human Resource Planning

(3 q.h.)

Assessment of government and private efforts to fight poverty and improve the labor market position of impoverished groups. Considers the relationship between causes of poverty and discrimination and possible remedies. Also considers training programs, negative income tax, family allowances, and other income maintenance schemes.

ECN 4312 Economic Concerns of Older Adults (3 q.h.)

Designed to provide a basic knowledge of economic principles as they apply to senior members of the community. Includes how the U.S. economic policies and market system determine the price, quality, and availability of medical care and other allied services.

ECN 4313 Women in the Labor Force

(3 q.h.)

Economic analysis of women's labor market position in the context of the changing economic structure and labor market institutions. Analysis of female labor force participation differences; male-female differentials in earnings and unemployment; occupational

concentration, occupational segregation; theories and evidence of sex discrimination; and new opportunities for women.

ECN 4315 Income Inequality and Discrimination (3 q.h.)

Analysis of the composition of impoverished groups and recent trends. Examines the labor market, demographic and institutional forces contributing to poverty, the role of education, the economics of race and sex discrimination, the public welfare system, and proposed reforms.

ECN 4321 Urban Economic Problems and Policies (3 q.h.)

Economic analysis of selected urban problems such as housing, poverty, transportation, education, health, crime, and the urban environment. Includes discussion of public policies relating to such problems.

ECN 4322 Economics of Transportation (3 q.h.)

Transportation and land-use patterns, ownership, regulations, financing, social costs and benefits of various modes of transportation, and economies of new technology.

ECN 4323 Environmental Economics (formerly Economics of the Quality of Urban Environment and Control) (3 q.h.)

Economic analysis of air, water, thermal, and noise pollution. The utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

ECN 4330 Economic Growth and Development (3 q.h.)

Prospects for economic growth and development in impoverished nations as indicated by economic analysis and historical experience. Includes the social, cultural, and institutional determinants of growth and an analysis of agriculture and development.

ECN 4331 American Economic History (3 q.h.)

Economic development of the United States, with emphasis on the post-Civil War period and the effect of certain European developments.

ECN 4333 European Economic Development (3 q.h.)

Historical survey of European economic development from overseas expansion to the

dissolution of empires and the Common Market. Examines the environmental impact of industrialism and the implications of living in a technological society.

ECN 4334 Comparative Economic Systems (3 q.h.)

Competing types of theoretical economic systems; analysis of the organization and operation of currently existing types of communist, socialist, and capitalist economies; and comparison and evaluation of the economic behavior and performance of different economic systems.

ECN 4335 International Trade (formerly International Economics 1) (3 q.h.)

Economics of international trade including tariffs, use of resources, and balance-of-payment mechanisms. *Prereq. ECN 4117 or equiv.*

ECN 4336 International Monetary

Economics (formerly International Economics 2) (3 q.h.)

International commercial policy, financial organizations, and recent problems. *Prereq. ECN 4335 or equiv.*

ECN 4337 International Economics (Intensive) (6 q.h.)

Same as ECN 4335 and ECN 4336. Prereq. ECN 4117 or equiv.

ECN 4341 Money and Banking Intensive (6 q.h.)

Same as ECN 4342 and 4343. Prereq. ECN 4117 or equiv.

ECN 4342 Money and Banking 1 (3 q.h.) Introduction to money and credit, commercial banking structure, and money creation as well as the problems and policies of centralized banking in the United States. *Prereq. ECN 4117 or equiv.*

ECN 4343 Money and Banking 2 (3 q.h.) Topics include theory of money, prices, and monetary policy; interest theory; debt management; and international monetary problems and analysis. *Prereq. ECN 4342 or equiv.*

ECN 4344 Government Finance (3 q.h.) Topics include fiscal functions, institutions, and politics; growth of the public sector; expenditure planning in theory and practice; cost-benefit analysis; principles of taxation and tax incidence; major taxes at federal, state, and local levels; fiscal policy for high employment, price stability and growth; and current fiscal problems, such as tax reform,

urban fiscal problems, fiscal federalism, and income maintenance programs. *Prereq. ECN 4117 or equiv.*

ECN 4345 Business Cycles and Inflation (formerly Business Cycles 1) (3 q.h.)

Considers the theories of business cycles and inflation and an empirical application of these theories to current business cycles, inflation, and stagflation problems. *Prereq. ECN 4117 and ECN 4215*.

ECN 4350 Introduction to Econometrics (3 q.h.)

Methods of econometric estimation and forecasting, including various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting. *Prereq. ECN 4117 and ECN 4252.*

ECN 4351 Problems in Economic Research (3 q.h.)

Research methods used by practicing economists. Topics include typical problems from areas of applied economics, such as choices of modeling framework, development of static and dynamic adaptive policy models, problems of data collection, review of estimation techniques, and interpretation of results. *Prereq. ECN 4117 and ECN 4252*.

ECN 4353 Introduction to Mathematical Economics (3 q.h.)

Introduction to mathematical analysis, with an in-depth study of theory of distribution. *Prereg. ECN 4117 or equiv.*

ECN 4360 Managerial Economics (3 q.h.) Theory of demand, price, and output as applied to business firms and capital budgeting. Prereq. ECN 4117 or equiv.

ECN 4362 Industrial Organization and Public Policy (3 q.h.)

Theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. Examines empirical studies that test the usefulness of applying theory to real markets and the existence of antitrust laws as a public policy designed to promote better market performance. *Prereq. ECN 4117 or equiv.*

ECN 4363 Government and Business 1

The rationale for government involvement in markets, the role of government in na-

tional economic affairs, and the relationship between government and business, including the application of antitrust laws to business.

ECN 4364 Government and Business 2 (3 q.h.)

The government's role in economic activities. The relationships between the government and industry, labor, agriculture, public utilities, and consumers. The changing role of government from laissez-faire policy to direct intervention in the economy. Wage and price controls, environment and antipollution policies, consumer protection, conglomerate mergers, and regulation of industries.

ECN 4384 The Economics of the Stock Market (3 q.h.)

Topics include the organization of the stock exchange, the highly speculative nature of the stock exchanges, the functions of the exchanges, capital gains, equity, dividends, stock options, splits, puts and calls, the crash of 1929, the crash of 1987, the Great Depression, controls on the stock market, and the Federal Reserve Board.

ECN 4492 Economic Policy Seminar (3 q.h.) Most advanced course for senior economic majors, with emphasis on independent study and contemporary issues. *Prereq. ECN* 4215 and ECN 4216.

ECN 4495 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. Prereq. 96 q.h., 3.5 q.p.a.

ECN 4496 Honors Program 2 (4 q.h.) See ECN 4495.

ECN 4497 Honors Program 3 (4 q.h.) See ECN 4495.

ECN 4500 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. Prereq. 87 q.h.

ECN 4501 Advanced Tutorial 2 (3 q.h.) See ECN 4500.

ECN 4510 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ECN 4511 Independent Study 2 (3 q.h.) See ECN 4510.

ECN 4512 Independent Study 3 (3 q.h.) See ECN 4510.

ECN 4601 Economics 1 (4 q.h.)

Development of macroeconomic analysis, review of national income concepts, national income determination fluctuation and growth, the role of the banking system and the Federal Reserve system, government expenditures and taxation, international trade, and balance of international payments. For Alternative Freshman-Year students only.

EDUCATION*

ED 4001 Integrated Language Skills Development 1 (2 q.h.)

Strives to improve a student's reading comprehension and related study and language skills. Devotes time, discussion, and considerable practice to meaningful skills such as basic reading comprehension and interpretation, including work in critical reading and other interpretational acts (inferences, understanding imagery, and symbolic usage). Focuses on study skills, reviewing, finding main ideas and details, outlining and summarizing, continuous interaction, and interaction of all the communications skills—reading, writing, listening, and speaking. For Alternative Freshman-Year students only.

ED 4002 Integrated Language Skills Development 2 (2 q.h.)

Continues discussion of topics introduced in ED 4001. For Alternative Freshman-Year students only. Prereq. ED 4001.

ED 4003 Integrated Language Skills A (4 q.h.)

Strives to improve a student's reading comprehension and related study and language skills. Devotes time, discussion, and considerable practice to meaningful skills such as basic reading comprehension and interpretation, including work in critical reading and other interpretational acts (inferences, understanding imagery, and symbolic usage). Focuses on study skills, reviewing, finding main ideas and details, outlining and summarizing, continuous interaction, and interaction of all the communications skills—reading, writing, listening, and speaking. For Alternative Freshman-Year students only.

ED 4004 Integrated Language Skills B (4 q.h.)

Extends ED 4003, with continued emphasis on study skills, including researching, organizing, and writing term papers. Explores critical thinking as it relates to the learning process. Also addresses the choices of academic major and career direction, emphasizing self-assessment and personal decisionmaking. For Alternative Freshman-Year students only. Prereq. ED 4003.

ED 4050 College Reading and Study Skills (3 q.h.)

Reading comprehension, text and lecture note-taking skills, and examination-taking skills. Students practice with excerpts from texts and taped lectures, and apply the skills to materials in other courses. Intended for students who are beginning college work and wish to develop reading and study skills. (Not for students who have already taken the Basic Day College courses Reading/Study Skills 1 or Integrated Language Skills Development 1.)

ED 4101 Introduction to Education (3 q.h.) Examines theories about the nature of teaching and learning. Evaluates the effects of traditional and innovative educational systems on learners. Considers the needs of the learner and the role of school and teacher.

ED 4102 Child Development and Learning (3 q.h.)

Surveys principles of child development from the pre-natal period through pre-adolescence. Examines learning and development in the context of relevant theory. Considers educational implications.

ED 4103 Adolescent Development and Learning (3 q.h.)

Examines social, emotional, and intellectual development in the adolescent years. Studies problems in the adolescent's family and social environments and in school adjustments.

ED 4406 Elementary Curriculum 1: Language Arts; Art; Music (3 q.h.)

This course examines the expressive components of a comprehensive and integrated language arts curriculum. Students will be

^{*}For Introduction to Special Education, see CRS 4200, page 180.

involved in the process of learning how to integrate speaking, listening, visual arts, and music/movement experiences in developing curriculum for children at various stages of development. Students will analyze how the expressive aspects of curriculum relate to critical thinking, problem solving, and literacy improvement. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4407 Elementary Curriculum 2: Social Studies (3 q.h.)

Describes and evaluates social studies curricula in use in the elementary school. Develops criteria to select appropriate social studies content, skills, and attitudinal objectives. Expects students to use these criteria to develop social studies experiences that meet the developmental needs of learners in a multicultural society. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4408 Elementary Curriculum 3: Science and Mathematics (3 q.h.)

Surveys methods and materials for teaching elementary school science and mathematics. Students will examine curricula, related mathematics and science content, and strategies and materials for teaching in a manner that takes into account the developmental stages of children. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4410 General Teaching Methods for

High School (3 q.h.)

Considers methods and materials appropriate to teaching adolescents. Examines various models and strategies of instruction. Students will plan curricula and incorporate essential features of effective curriculum and teaching plans. The course seeks to encourage attitudes identified with tenets of good teaching. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4411 a, b, c, d Teaching in the High School: (a) mathematics; (b) science; (c) English; (d) history and social sciences (3 q.h.)

Examines the teaching of specific subject areas in the high school. Topics include organizing and presenting lessons, developing teaching materials, using instructional technology, and developing and implementing evaluation instruments. Students will exam-

ine the current curriculum resources in their subject areas. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4412 Curriculum Development in the

High School (3 q.h.)

Examines how goals and objectives are selected and how priorities are determined. Considers how educational programs are designed to meet goals, and how educational outcomes are evaluated. Compares different approaches to organizing learning experiences. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4415 Reading/Learning Problems in Sec-

ondary School (3 q.h.)

Examines developmental and corrective reading/literacy programs at the secondary school level. Examines the development of reading rate, comprehension, and study skills in the content areas. Introduces formal and informal methods for assessing reading and writing ability. Prereq. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4426 Fundamentals of Reading (3 q.h.) Considers reading as an aspect of language. Examines the major growth areas of reading and how reading acquisition is facilitated by developmental instruction. Considers major approaches to instruction in a whole language and experientially integrated environment. Also considers other aspects of literacy development. Prereg. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4801 Field Experience 1 (1 q.h.) Teacher certification students are required to fulfill three fieldwork placements of 25 hours each while in the program of study. The placements are in schools at the level and in the area of certification. Students will observe teaching and fulfill field experience requirements as assigned. Prereq. ED 4101. Course is open only to students accepted into the

Teacher Preparation Program.

ED 4802 Field Experience 2 (1 q.h.) See ED 4801. Prereg. ED 4101. Course is open only to students accepted into the Teacher Preparation Program.

ED 4803 Field Experience 3 (1 q.h.) See ED 4801. Prereq. ED 4101. Course is open only to students accepted into the Teacher Prepa-

ration Program.

ED 4817 Student Teaching Practicum (8 q.h.) Allows for full-time participation in a University-arranged and supervised school program designed to analyze learning and teaching and to demonstrate, evaluate, and develop teaching skills. Prereq. Formal acceptance into program and completion of advanced professional sequence and field experience with a QPA of at least a 2.000 in all professional courses and a minimum overall QPA of 2.500.

EMERGENCY MEDICAL SERVICES

EMS 4107 EMT-Basic (9 q.h.)

The course covers evaluation and management of the following medical emergencies; cardiopulmonary arrest, severe bleeding and shock; fractured bones; care for heart attack, stroke, burn and poisoning victims; extrication and removal of victims from crashed vehicles and collapsed buildings; emergency childbirth and various other medical, emotional, and environmental emergencies.

EMT-Basic includes: 6 hours of class weekly for 12 weeks. Four (4) all day Saturday exercises (combination of indoor and outdoor) that include practical demonstration of ambulance and / or emergency vehicles and techniques. Ten (10) hours of in-hospital emer-

gency room observation.

EMT Basic Skills: CPR (cardiopulmonary resuscitation), obstructed airway maneuvers, control of bleeding, taking vital signs (pulse/respiration/blood pressure), patient assessment, bandaging and splinting, emergency carries and lifting and moving devices (ambulance and orthopedic stretchers, etc.), triage at multi-victim accident.

EMS 4117 Emergency Medical Services 1

(4 cl., 6 lab., 6 q.h.)

Introduction to the Paramedic Program: role and responsibilities of Paramedics, medical terminology, human systems, patient assessment, blood, fluids and electrolytes, shock and shock management. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. To receive credit for this course, you must also register for BIO 4178.

EMS 4118 Emergency Medical Services 2

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: respiratory system, cardiovascular system, pathophysiology and emergency management, electrocardiograms, life-threatening dysrhythmias. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. *Prereq. EMS 4117 or equiv.*

EMS 4119 Emergency Medical Services 3

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: central nervous system, soft tissue injuries, musculoskeletal system, medical emergencies, acute abdomen, genitourinary system, geriatric emergencies. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. To receive credit for this course, you must also register for BIO 4179. Prereq. EMS 4118 or equiv.

EMS 4120 Emergency Medical Services 4

(4 cl., 6 lab., 6 q.h.)

Continuation of Paramedic Program: obstetric/gynecologic emergencies, including emergency childbirth, neonatal and pediatric patients, emotionally disturbed patients, stress management, gaining access and extrication, multiple casualty incidents, emergency communications. The laboratory component provides the opportunity to correlate didactic knowledge while developing psychomotor skills. *Prereq. EMS 4119 or equiv.*

EMS 4121 Emergency Medical Services 5

(27.5 lab., 11 q.h.)

Clinical Practicum I of the Paramedic Program: application of theoretical knowledge and psychomotor skills in hospital unit rotations. *Prereq. EMS 4120 or equiv.*

EMS 4122 Emergency Medical Services 6

(27.5 lab., 11 q.h.)

Clinical Practicum II of the Paramedic Program. Prereq. EMS 4121 or equiv.

EMS 4123 Emergency Medical Services 7

(100 lab., 3 q.h.)

Field internship component of the Paramedic Program: opportunity to practice and develop all necessary psychomotor skills on an urban advanced life support system. *Prereq. EMS 4122 or equiv.*

ENGLISH

ENG 4005 Introduction to English as a Second Language (noncredit)

Introduction to the grammar and rhetoric of English as a second language. Practice in listening, speaking, and writing, with selected readings and exercises for improving vocabulary and pronunciation. (May not be used to satisfy ENG elective requirements for English BA/BS degrees.)

ENG 4006 Intermediate English as a Second Language (noncredit)

Intermediate course in English as a second language. Practice in preparing written and oral reports, including business and social letters. (May not be used to satisfy ENG elective requirements for English BA/BS degrees.) Prereq. ENG 4005 or equiv.

ENG 4007 Advanced English for International Students (3 q.h.)

Advanced course in English as a second language. Practice in special forms of writing to improve clarity, syntax, and organization. (May not be used to satisfy ENG elective requirements for English BA/BS degrees.) Prereq. ENG 4006 or instructor's permission.

ENG 4011 Elements of Writing (3 q.h.) Review of the structural patterns of current English. Practice in writing sentences, paragraphs, and short papers. (May not be used to satisfy ENG elective requirements for English BA/BS degrees.)

ENG 4012 Elements of Grammar (3 q.h.) A study of grammar and the way the English language works. Helps students improve their writing through an understanding of the parts of speech, the mechanics of punctuation, and the vagaries of spelling. Exercises in solving problems of number, case, tense, degree, and usage. (May not be used to satisfy ENG elective requirements for English BA/BS degrees.)

ENG 4013 Fundamentals of English 1 (4 q.h.)

Intensive introduction to the principles of effective expository writing, emphasizing description, paragraph construction, and organization. Includes a review of the conventions of English usage, punctuation, and syntax. Essay assignments. For Alternative Freshman-Year students only.

ENG 4014 Fundamentals of English 2 (4 q.h.)

Intensive instruction in exposition, argument, and academic essay and research paper writing, in addition to continued study of the conventions of English usage, punctuation, and syntax. Essay assignments. For Alternative Freshman-Year students only. Prereq. ENG 4013 or equiv.

ENG 4100 Critical Writing 1 (formerly ENG 4110 3 q.h.) (4 q.h.)

Detailed examination of the principles and methods of rhetoric, especially narration, description, and exposition. Includes frequent practice in writing paragraphs and themes in those modes. A writing proficiency test is given at the first class meeting.

ENG 4111 Critical Writing 2 (3 q.h.)

Continued examination of the principles and methods of rhetoric, especially persuasion and argument, the study of short fiction, and the development of research skills. Includes practice in writing persuasive and critical themes and in preparing research papers. *Prereq. ENG 4100 or equiv.*

ENG 4112 Critical Writing 3 (formerly Approaches to Literature) (3 q.h.) Further refinement of writing and analytical skills through the study of drama and poetry. Practice in writing longer critical papers. Prereg. ENG 4111 or equiv.

ENG 4114 Poetry (3 q.h.)

An introductory course in the techniques, forms, structures, and styles of both traditional and contemporary poetry in English. Indispensable to any upper-level courses that deal with poets as major figures, this basic course should leave students with the essential terms of poetic analysis and with an appreciation of the challenges that poets set both for themselves and their readers.

ENG 4115 Literary Theory and Criticism (3 q.h.)

An introduction to traditional and modern literary theory and criticism, and may include such historical figures as Plato and Aristotle, Sidney and Wordsworth, and such contemporary approaches as Marxist, feminist, psychoanalytic, and post-structuralist.

ENG 4120 English Literature: Faith and Humanism (3 q.h.)

Englishliterature from its beginnings to 1700, including works by Chaucer, Spenser, Shakespeare, Donne, and Milton.

ENG 4121 English Literature: Reason and

Romanticism (3 q.h.)

English literature from the Neoclassical period to the Romantic age, including works by Pope, Swift, Johnson, Blake, Wordsworth, and Keats.

ENG 4122 English Literature: Victorians and Moderns (3 q.h.)

English literature from the Victorian Age through the twentieth century, including works by Browning, Arnold, Hardy, Yeats, and Eliot.

ENG 4123 Early American Literature: Faith, Reason, and Nature (3 q.h.)

American literature from its beginnings through the nineteenth-century Transcendentalists, including works by Bradstreet, Taylor, Edwards, Franklin, Emerson, and Thoreau.

ENG 4124 American Romantics and American Realists (3 q.h.)

The fiction and poetry of nineteenth-century America, including works by Hawthorne, Melville, Whitman, Dickinson, Twain, James, Crane, and Dreiser.

ENG 4125 American Literature: The Modern Temper (3 q.h.)

The prose and poetry of twentieth-century America, including works by Eliot, Stevens, Fitzgerald, Hemingway, Wright, and Plath.

ENG 4131 God, Gods, and Heroes: The Literature of the Ancient and Medieval Worlds (3 q.h.)

Literary traditions of the ancient world and the Middle Ages in the works of such writers as Homer, Aeschylus, Sophocles, Euripides, Aristophanes, Virgil, and Dante, as well as in the art of biblical narrative.

ENG 4132 Man, Reason, and Imagination: Literature from the Renaissance to the Romantic Age (3 q.h.)

Literary traditions of the Renaissance, Neoclassicism, and Romanticism in the work of such writers as Machiavelli, Moliere, Racine, Voltaire, and Goethe.

ENG 4133 Order and Disorder: Literature of the Moderns (3 q.h.)

Literary traditions of Realism and Modernism in the work of such writers as Dostoevsky, Ibsen, Mann, Kafka, and Sartre. ENG 4210 Science Fiction (3 q.h.)

Myths and rhetorical strategies of science fiction, including such novels as Frankenstein, Childhood's End, and Stranger in a Strange Land.

ENG 4211 Fantasy Literature (3 q.h.)

Exploration of fantasy literature of the nineteenth and twentieth centuries and its roots in myth, fairy-tales, and popular legends. Focuses on the works of such authors as T.H. White, Lewis Carroll, Lord Dunsany, Kenneth Grahame, Richard Adams, J.R.R. Tolkien, Ursula Le Guin, and Patricia McKillin.

ENG 4212 Horror Fiction (3 q.h.)

Horror literature and its concerns with the supernatural, the irrational, the nature of evil, and the landscape of dreams, including such novels as *Dracula*, *Dr. Jekyll and Mr. Hyde*, and *The Turn of The Screw*.

ENG 4213 Detective Fiction (3 q.h.)

Elements of intrigue, logic, and thought converge in this study of the whodunit. Students sample a wide range of detective fiction to explore the questions of innocence and guilt, action and responsibility, power and authority, and victim and victimizer, and to see connections between this popular form of literature and its classical antecedents.

ENG 4214 The Psychological Novel (3 q.h.) A study of the mental and emotional processes affecting the form and style of such works as Crime and Punishment, The Metamorphosis, and The Stranger.

ENG 4220 Children's Literature (3 q.h.) The psychology of creation, the ways of the imagination, and the role of fantasy and play in such children's books as *Alice in Wonder*-

land, The Wizard of Oz, and Charlotte's Web.

ENG 4221 Images of Women In Literature (3 q.h.)

Images of women and their underlying archetypes in imaginative literature. Includes such writers as Homer, Austen, Ibsen, and Lawrence.

ENG 4222 American Women Writers (3 q.h.) Representative nineteenth- and twentieth-century American women writers, including such poets as Dickinson and Plath and such novelists as Chopin and Cather.

ENG 4223 British Women Writers (3 q.h.) Important historical and thematic connections in the work of British women writers of the last two hundred years, including the novels of Austen, Eliot, Woolf, and Lessing.

ENG 4235 The American Dream (3 q.h.) Is the American Dream true or a myth? The study of literature about money: stories of wealth and poverty, success and failure. Students will read such books as Franklin's Autobiography, Wharton's House of Mirth, and Sinclair's The Jungle.

ENG 4236 Literary Journalism (3 q.h.) Explores literary journalism as an emerging class of writing that challenges established concepts of fiction and nonfiction. Students will consider questions of accuracy and credibility, literal and figurative representation, structure and narrative voice. Texts may include Fatal Vision, Hiroshima, In Cold Blood, and Invasive Procedures.

ENG 4240 Fiction and the Movies (3 q.h.) Reading and seeing: an examination of the success (and failure) of turning famous novels and stories into movies. Analysis of bookfilm case studies such as The Postman Always Rings Twice, Howard's End, Sophie's Choice, The Unbearable Lightness of Being, The Silence of the Lambs, and The Last Picture Show. Includes elementary film theory and criticism.

ENG 4241 Topics In Film (3 q.h.) Explores a chosen theme in literat

Explores a chosen theme in literature and in film, drawing upon important cultural, political, or psychological issues of our time. Focuses on a different topic each quarter, using films inspired by both classic and contemporary novels, stories, and plays—for example, Literary Heroines Go Hollywood, Paranoia: From Hitchcock to Oliver Stone, Films from Shakespeare—so that students may take this course more than once.

ENG 4242 Screenwriting (3 q.h.)

An introduction to the craft of constructing a feature-length shooting script for filmor television. Emphasis is on the close defining of plot ideas and the "sound" of the characters, on the structuring of effective short scenes and longer sequences, and on learning some of the cinematic techniques and trade secrets peculiar to the art of film writing. Video clips will be analyzed throughout the course.

ENG 4243 Screenwriting Workshop (3 q.h.) An advanced course, intended primarily for students wishing to complete or polish scripts begun in ENG 4242. May also be taken by anyone who already knows the fundamentals of the screenwriting format and now wishes to begin a new project or finish one started elsewhere. Prereq. ENG 4242 or instructor's permission.

ENG 4349 Expository and Persuasive Writing 1 (3 q.h.)

Designed to help students develop confidence and proficiency in writing. Through first drafts to revisions, weekly writing assignments concentrate on mastering the skills of subject focus, clarity of expression, controlled development, and organization. *Prereq. ENG 4100 or equiv.*

ENG 4350 Expository and Persuasive Writing 2 (3 q.h.)

Development of precise and persuasive writing patterns through experiments with various rhetorical strategies. Students are expected to write extensively on topics of current interest to gain fluency and to learn how to target their writing toward different audiences. Assignments also provide practice in persuasive writing and in using different writing models to gain control of the material. Prereq. ENG 4349 or equiv.

ENG 4352 Expository Communications (3 q.h.)

Workshop in expository prose, emphasizing the practical problems of the writer on the job in advertising, public relations, or publishing. Includes practice in designing and writing special projects. *Prereq. ENG 4350 or equiv.*

ENG 4356 Creative Writing (3 q.h.) An opportunity to write and develop a variety of forms, including experiments in journals and short stories, plays and poems. Features in-class discussion of students' work and a final project of choice.

ENG 4357 Creative Writing: Poetry (3 q.h.) Practice in writing different forms of poetry for beginning poets. Includes discussion and criticism of student work and selected texts.

ENG 4358 Creative Writing: Fiction (3 q.h.) Practice in writing various types of short stories for beginning writers of short fiction. Includes discussion and criticism of student work and selected texts.

ENG 4359 Creative Writing Workshop (3 q.h.)

Discussion and criticism of student manuscripts for practicing writers.

ENG 4361 Creative Writing 4 (3 q.h.)

A master class designed for those students who have taken the basic creative writing courses (ENG 4356, ENG 4357 or ENG 4358, and ENG 4359). Students are expected to be committed writers and comfortable with critical appraisals and exchanges. Open to both fiction writers and poets (with the instructor's permission).

ENG 4363 Writing for the Marketplace

(3 q.h.)

Workshop for writers venturing into the marketplace. Provides a working knowledge of the publishing industry and useful practice in preparing and editing manuscripts for publication. Includes the development of effective strategies for composing query letters, synopses, outlines, and sample manuscripts.

ENG 4370 Developmental Editing 1 (formerly ART 4602) (3 q.h.)

For individuals with some editorial experience who wish to develop their skills. Focuses on bringing a manuscript to completion by rewriting and reorganizing material with author's cooperation. Includes lectures, discussion, guest speakers from publishing houses, and a variety of writing/editing assignments in fiction and nonfiction.

ENG 4372 Manuscript Editing (formerly ART 4604) (3 q.h.)

For novices who wish to break into the field or those who edit on the job. Numerous written exercises give students practice in handling common problems in editing book and magazine manuscripts. Includes practice in spelling, grammar, syntax, and style.

ENG 4380 Writing for the Professions 1 (formerly Business Writing and Reports 1)

(3 q.h.)

Introduction to the vocabulary and philosophy of business communications. Practice in planning, writing, and analyzing effective business letters and memoranda. A writing proficiency test is given at the first class meeting.

ENG 4381 Writing for the Professions 2 (formerly Business Writing and Reports 2)

(3 q.h.)

Methods and principles of research and documentation of semitechnical analyses and business reports. Practice in organizing and writing complex forms of business communications. *Prereq. ENG 4380 or equiv.*

ENG 4383 Writing for the Professions Intensive (formerly Business Writing and Reports Intensive) (6 q.h.)

Same as ENG 4380 and ENG 4381. A writing proficiency test is given at the first class meeting.

ENG 4384 Advanced Writing for the Professions (formerly Advanced Business

Writing) (3 q.h.)

Students develop analytical and problemsolving abilities through study of cases aimed at developing students' analytical and problem-solving abilities. Through carefully directed classroom discussions of administrative problems presented in case studies, students consider case facts, assumptions, and opinions to reach a solution to a manager's problem, and have the opportunity to develop the oral and written communication skills to set their solutions in motion. *Prereq. ENG* 4381.

ENG 4500 The English Language (3 q.h.) Development of modern English from its pre-Anglo-Saxon beginnings. Effects of Roman, Scandinavian, and Norman invasions; dialect geography; evolutionary change; and word formation and borrowing.

ENG 4501 Linguistics (3 q.h.)

Introduces students to a new way of thinking about language. Normally, using language is as unconscious an activity as walking or chewing gum. But if we ask the right questions, we can uncover much of our unconscious linguistic knowledge: about sentence structure (syntax), meaning (semantics), word forms (morphology), and speech sounds (phonology).

ENG 4600 Topics in Literature (3 q.h.) Examines a variety of subjects and themes, such as the Bible as literature, ethnic literature in America, modern Irish writers, Latin American fiction, Russian masterworks, the literature of old age, the new essayists, and the relationship between literature and the arts. Because topics change from quarter to quarter, students may take this course more than once, provided it is a different topic each time.

ENG 4604 Major Figure in Literature (3 q.h.) Examines in detail and depth the work of a major writer of poetry, fiction, or drama, such as Whitman, Tolstoy, Woolf, or Beckett. Students may take this course more than once, provided they focus on a different figure each time.

ENG 4610 The American Short Story (3 q.h.) Development of the American short story from its nineteenth-century origins to its present forms. Includes such writers as Poe, Hawthorne, James, Hemingway, Roth, and Updike.

ENG 4611 The American Novel (3 q.h.) Development of the novel in America and its characteristic qualities. Includes such writers as Cooper, Melville, James, Wharton, Faulkner, and Ellison.

ENG 4639 Twentieth Century American Literature (3 q.h.)

An examination of some of the major American writers of the twentieth century and the movements and themes that marked their fiction and poetry. Authors to be studied may include Ezra Pound, T.S. Eliot, Robert Frost, William Carlos Williams, F. Scott Fitzgerald, Ernest Hemingway, Flannery O'Connor, Allen Ginsberg, and Alice Walker.

ENG 4640 Twentieth Century English Literature (formerly The Twentieth Century) (3 q.h.)

An examination of some of the major writers in England and the movements, such as Realism or Post Modernism, that marked their fiction and poetry. Authors studied may include William Butler Yeats, James Joyce, Virginia Woolf, Dylan Thomas, Muriel Spark, Anthony Burgess, and Iris Murdoch.

ENG 4642 The English Novel (3 q.h.) Development of the English novel from its beginnings in the eighteenth century through its concern with manners and morals in the nineteenth century to the experimentation of the twentieth century. Includes such writers as Fielding, Richardson, Austen, Dickens, Eliot, and Woolf.

ENG 4649 European and English Short Story (3 q.h.)

Development of the short story in Europe and England in both the nineteenth and twentieth centuries. Includes such writers as de Maupassant, Balzac, Mann, Camus, Kipling, Lawrence, Greene, and Böll.

ENG 4650 Modern Bestsellers (3 q.h.) The fascinating world of modern bestsellers, a world of romance and adventure, of high living and sinister intrigue, by such popular writers as Rona Jaffe, Harold Robbins, Jacqueline Susann, and Irving Wallace.

ENG 4651 The Continental Novel (3 q.h.) Development of the European novel through its various forms and themes, from Balzac and Tolstoy to Proust and Mann.

ENG 4655 Contemporary Fiction (3 q.h.) An examination of some of the most influential fiction of the last quarter century. Authors will vary, and students may expect to study writing by both established and emerging writers. Authors such as Alice Walker, Russell Banks, Jay McInerney, Toni Morrison, and Milan Kundera will be studied.

ENG 4658 Shakespeare the Dramatist (3 q.h.)

Defailed examination of representative plays from Shakespeare's early, middle, and late periods in order to illustrate his development as a dramatist and define his principal themes in such plays as A Midsummer Night's Dream, Romeo and Juliet, and King Lear.

ENG 4659 Shakespeare: The Major Tragedies and Comedies (3 q.h.) Study of examples of Shakespeare's mature dramatic art, such as As You Like It, Much Ado About Nothing, Hamlet, Macbeth, and Antony and Cleopatra.

ENG 4660 Shakespeare on Film (3 q.h.) A survey of the variety of ways Shakespeare has been adapted to the screen, featuring classic versions of the great tragedies by Orson Welles, Laurence Olivier, and Roman Polanski, as well as Kenneth Branagh's Henry V and Burton and Taylor in The Taming of the Shrew.

ENG 4802 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

ENG 4803 Honors Program 2 (4 q.h.) See ENG 4802.

ENG 4804 Honors Program 3 (4 q.h.) See ENG 4802.

ENG 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

ENG 4816 Advanced Tutorial 2 (3 q.h.) See ENG 4815.

ENG 4820 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

ENG 4821 Independent Study 2 (3 q.h.) See ENG 4820.

ENG 4822 Independent Study 3 (3 q.h.) See ENG 4820.

ENG 4823 Field Work in Writing for the Professions (formerly Field Work in Business Writing) (6 q.h.)

Allows students to earn credit for the application of their academic background in business writing to practical problems in the work place. Prereq. ENG 4380 and ENG 4381 and Program Office approval.

EARTH SCIENCES

ESC 4103 Introduction to the Earth Sciences: The Solid Earth (3 q.h.)

A general introduction to the processes that affect the earth's surface and interior: the effects of rivers and glaciers on the earth's surface; the influence of wind, waves, currents and storms on coasts; plate tectonics and the origin of volcanoes, mountain belts, and earthquakes.

ESC 4104 Introduction to the Earth Sciences: Earth's Oceans and Atmosphere (3 q.h.)

This course is a general introduction to the earth's oceans and atmosphere. The course explores how the sea is affected by: the rotation of the earth; by sunlight; by the gravity of the moon and sun; by glaciers and rivers; and by the surrounding continents. The earth's weather systems are influenced by many of the same factors, and the course uses this background to explain the broad patterns of winds and storms on our planet.

ESC 4105 Introduction to the Earth Sciences: Earth and the Planets (3 q.h.)

This course considers current ideas on the development of the solar system. It describes how the earth and moon evolved as planetary bodies, and contrasts their development with that of the other planets and moons in terms of size, distance from the sun, and bulk composition. Many observations are

used to describe current thoughts about how the solar system has developed, including: telescope studies of the sun, moon and planets; studies of rock samples returned from the moon and of meteorites found on the earth; and data obtained by planetary lander and fly-by missions.

ESC 4107 Solid Earth, Oceans and Atmosphere (6 q.h.) Same as ESC 4103 and ESC 4104.

ESC 4109 Introduction to the Earth Sciences (Intensive) (9 q.h.) Same as ESC 4103, ESC 4104, and ESC 4105.

ESC 4111 Geology of the Boston Area (3 q.h.)

Designed to give students without prior field experience a working knowledge of the bedrock and glacial development of the Boston metropolitan area. There will be six regular class meetings of standard length and two all-day Saturday field trips.

ESC 4203 Gemology (3 q.h.)

Topics include aspects of crystallography and physical properties of minerals relevant to gemstones; gem cutting methods; origin of color in minerals; behavior of light in minerals and its influence on gem cutting; types of inclusions found in gemstones and their effects on optical properties (star sapphire, cat's eye); techniques of growing crystals; geology and geography of selected gem deposits; properties of the major types of gemstones and imitations.

This course covers the same range of material as ESC 4103, but in more detail and at a faster pace. The course focuses on a discussion of the plate tectonic processes believed to underlie the evolution of the continents, oceanic islands, and the ocean basins, in order to explain the generation of earthquakes, volcanoes and mountain belts. One effect of moving continents and ocean basins sideways is to create high mountain ranges. Once the rock has been uplifted by plate tectonic events, the course examines the weathering and erosional processes which wear the

ESC 4204 Physical Geology (3 q.h.)

ESC 4210 Physical Oceanography (3 q.h.) Origin of the global ocean, the physical and chemical properties of sea water, the development of ocean currents and their effects on land masses of the world, and the problems of ocean pollution.

mountains down.

ESC 4211 Biological Oceanography (3 q.h.) Study of habitat zones and organisms of the sea and the economic importance of renewable marine resources for an expanding world population.

ESC 4212 Geological Oceanography (3 q.h.) This course examines the geology of the sea floor. Continental shelves, abyssal plains, volcanic ocean ridges, and deep-sea trenches are explained using the plate tectonics model of the earth. Observations from submersibles, rock and sediment samples from the sea floor, and geophysical methods are used to explain the processes that form the mountains and valleys and the rock types that characterize the sea floor.

ESC 4213 Marine Resources (3 q.h.)

This course considers the ways in which the sea is used as a source of food, energy, transportation, and recreation. The importance of mariculture, conservation, and effects of pollution on fish and shellfish stocks are discussed. Energy sources derived from the sea include tidal power, temperature differences between warm surface water and cold deep water, and offshore deposits of gas and oil. The course concludes with a discussion of the conflicts inherent in the diverse ways in which the seas are used for recreation, transportation, fishing, and the extraction of energy resources.

ESC 4218 Groundwater (3 q.h.)

The course discusses the geologic nature of different types of aquifers in New England and other parts of the world, and examines the principles of groundwater flow in permeable rock and soil. *Prereq. Calculus course or permission of the instructor*.

ESC 4219 Geochemistry of Groundwater (3 q.h.)

The course describes how the composition of uncontaminated groundwater is affected by the chemistry of precipitation and by reactions with the organic and inorganic components of soil and rock. The course next considers the geochemical aspects of a number of specific groundwater contamination problems including: leachate plumes from landfills; improper disposal of hazardous wastes; leaking underground storage tanks; saltwater intrusion of coastal aquifers; etc. Students should have taken at least one chemistry course.

ESC 4220 Wetlands (3 q.h.)

The course explores the hydrology and biogeochemistry of wetlands, describes the attributes of specific wetlands types, and examines current wetland protection and management strategies.

ESC 4221 Environmental Geophysics (3q.h.) Intended for both students and practicing professionals, this course will show how geophysical techniques can help solve a wide range of environmental and engineering problems. After a brief historical survey, the most commonly used methods are considered in detail, including: seismic, gravity, magnetics, resistivity, electromagnetics, ground penetrating radar, and borehole methods. Emphasis on practical applications, and numerous case studies will be used as examples. Students will have the opportunity to design and plan geophysical studies based on actual and theoretical situations.

ESC 4233 The Earth's Atmosphere (3 q.h.) An introduction to the science of meteorology, in more detail than the treatment in ESC 4104. This course describes how the sun's heat, the earth's gravity, and the earth's rotation combine to cause the large-scale patterns of winds on our planet. After describing why winds generally move east-to-west in some latitudes and west-to-east in others, the formation and motion of smaller air masses and weather fronts is considered, a topic continued in greater depth in ESC 4234.

ESC 4234 Storms (3 q.h.)

This course is focused on understanding how different types of storms develop and why they occur when and where they do. Topics include: thunderstorms, tornadoes; formation of rain, hail, and snow; wind; lightning; hurricanes and cyclones. *Prereq. ESC* 4233 recommended.

ESC 4235 Weather Forecasting and Climate

Change (3 q.h.)

This course begins by discussing the kinds of data that meteorologists use to make short-term weather forecasts; how the data are obtained and summarized on weather maps; and how the maps and computers assist in forecasting the weather. The second part of the course steps backward in time to examine the causes of the earth's long-term climate fluctuations, on a scale of tens of thousands of years, using the Milankovic hypothesis (changes in the earth's orbit, etc.).

Implications of the Milankovic model, plus possible warming due to the Greenhouse Effect, are used to discuss possible future changes in the earth's climate. (ESC 4233 useful but not required.)

ESC 4239 Observational Astronomy (3 q.h.) Introduction to the planets, stars, and constellations visible to the naked eye through lectures and outside viewing sessions. Emphasizes stars and constellations easily seen from mid-northern latitudes.

ESC 4243 Stars (3 q.h.)

This course traces the events that occur throughout the lifetimes of different kinds of stars. Topics include: the sun as a model star; the differences that are observed in mass, temperature, and types of energy emitted among different types of stars; formation of stars; creation of chemical elements within stars and dispersal of these elements into surrounding space during super-novas; and processes that stars undergo in their juvenile stage, through middle age, to death. Prereq. ESC 4239 recommended.

ESC 4244 Cosmology (3 q.h.)

Cosmology is the study of the universe as a whole. This course expands upon topics introduced in ESC 4243. Topics discussed in this course include: the structure of galaxies (Milky Way, Andromeda, etc.); the nature of interstellar and intergalactic space; and quasars, pulsars, and black holes. The major focus of this course is to enable students to appreciate the data and arguments involved in choosing between different explanations that have been proposed for the behavior of the universe. Prereg. ESC 4243 recommended.

ESC 4250 Conservation and the Nation (3 q.h.)

This course provides an overview of the ways in which people interact with the environment. Topics covered include: air and water pollution; waste disposal; farming and soil conservation; and general principles of ecology, emphasizing human impact on the environment and how it has changed in North America over the past few hundred years.

ESC 4251 Conservation and the Community (3 q.h.)

Study of conservation problems and landuse practices at the local level. Includes an indepth study of urban development and its impact on the environment. Prereq. ESC 4250 recommended.

ESC 4252 Conservation Management (3 q.h.) This course reviews the structure of local governments and the role played by government in regulating people's impact on the environment. Topics include: land use planning and zoning; conservation commissions; wetlands protection; groundwater and drinking water protection; solid waste and hazardous waste management; and sources of information or assistance for community efforts. *Prereq. ESC 4251 is recommended.*

ESC 4260 Seminar in Geological Hazards

A wide variety of natural phenomena (floods, earthquakes, hurricanes, volcanic eruptions, desertification, etc.) can have severe effects on people, on society (communications, agriculture, transportation systems, etc.) and on the environment. This course will investigate the geologic causes of 2 or 3 of these environmental hazards, depending on student interests. It will introduce students to the concepts of risk assessment, and to the ways in which societies can act to minimize the risks and to recover from the events when they occur.

ESC 4430 Soils and the Environment (3 q.h.) An introduction to the origin, characteristics, and classification of soils, emphasizing important types found in southern New England. The course provides an overview of important physical, chemical and biological processes which affect the development of soils, and discusses the role played by grain size, mineral type, and organic content of soils in controlling the migration of contaminants through the soil horizon.

ESC 4435 Air Quality (3 q.h.)

While modern societies contribute much pollution to the atmosphere, natural processes can also adversely affect air quality. This course discusses the wide range of impacts which can affect air quality including: particulates such as asbestos or lead-rich dust, volcanic ash, or ash from forest fires and power generation; biological inputs such as pollen and methane from landfills or cattle feedlots; and gaseous chemical pollutants such as radon and volatile organic compounds. It provides an overview of current air-quality legal standards, and methods of monitoring air quality.

ESC 4440 Geology and Urban Planning (3 q.h.)

This course focuses on the geologic limitations on urban development. It outlines methods of incorporating geologic information into land-use zoning and development regulations for coastal and hillslope areas, and for groundwater protection. Class exercises based on real situations and localities help to illustrate how inappropriate land uses can occur if local geologic constraints

are ignored.

ESC 4450 Introduction to Hydrology (3 q.h.) This course describes the processes which affect the movement and composition of water at and near the earth's surface, including rain and atmospheric chemistry; groundwater; rivers; lakes; estuaries; and the sea. Also discussed are the global cycles of nutrients (nitrogen, phosphorus); physical processes which control the seasonal vertical mixing of lakes; and an introduction to the use of box models to estimate the buildup or removal of pollutants in bodies of water.

ESC 4680 Science, Technology, and Ancient Societies (3 q.h.)

Interdisciplinary course conducted using an independent study/seminar approach. An examination of changes in sciences, technologies, and societal structures from prehistory through classical cultures and the beginning of the Renaissance.

ESC 4681 Science, Technology, and Modern Societies (3 q.h.)

Interdisciplinary course conducted using an independent study/seminar approach. An examination of changes in sciences, technologies, and societal structures from the beginning of the Renaissance through the period of industrialization and the present day.

ESC 4682 Science, Technology, and Society (Intensive) (6 q.h.)

Same as ESC 4680 and ESC 4681.

ESC 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 23 for details. Prereq. 87 q.h.

ESC 4701 Advanced Tutorial 2 (3 q.h.) See ESC 4700.

ESC 4801 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. Prereq. 96 q.h., 3.0 q.p.a.

FINANCE

FI 4101 Personal Finance (3 q.h.)

A practical approach to problems involved in managing personal finances. Includes financial planning, budgeting, obtaining credit and loans, income taxes, savings and investments, life insurance, home buying, and estate planning. Subjects are treated in a nontechnical manner. Recommended for nonfinance majors.

FI 4301 Principles of Finance (3 q.h.)

The scope and nature of finance, introducing basic financial concepts and principles. Includes financial analysis, financial planning, working capital management, the time value of money, and an introduction to financial markets and different types of securities.

FI 4302 Financial Management (3 q.h.) Introduction to financial management from both domestic and international perspectives. Includes valuation, leverage, financial analysis and planning, working capital management, capital budgeting, cost of capital, and long-term and short-term financing decisions. Spreadsheets used. Prereq. MIS 4101 and FI 4301. Please bring a calculator to class.

FI 4306 Personal Financial Planning (3 q.h.) Insurance planning is an important part of financial planning. Class focus is on the informed decisions necessary to establish a comprehensive, rational plan of personal insurance. Class discussion, lectures, and readings examine the various kinds of personal insurance and how to create an insurance package for different insurance needs.

FI 4310 Investment Principles (3 q.h.) Investment concepts, practices, and procedures. Reviews various types of investments, including the role of security markets and security analysis. Prereq. FI 4301.

FI 4320 Credit Principles (3 q.h.) Introduction to credit and its functions. Examines the role of the credit executive, credit investigation, documentary credit, trade credit, and organization of the credit department. Prereq. FI 4301.

FI 4325 Budgeting and Planning (3 q.h.) Managerial planning, budgetary control, and financial analysis. Studies the interrelation between functional areas in an organization using consolidated profit planning as an in-

tegrating device. Covers fundamental financial analysis, comprehensive profit planning, general expense planning, production planning, materials planning, purchasing. Prereq. FI 4301.

FI 4329 TQM for Financial Managers (formerly Quality Financial Management) (3 q.h.)

The application of Total Quality Management (TQM) principles in financial organizations is the responsibility of the contemporary financial manager. These principles include empowering individuals through team-building, encouraging broad employee input to continuously improve operations, focusing on customer services, and monitoring/evaluating the quality of outcomes. The effect of quality management is traced through the overall planning and budgeting process to the key risk and return indicators of financial performance and the creation of shareholder wealth. Prereg. FI 4302, FI 4310 and FI 4325.

FI 4332 Management of Banks and Financial Institutions (3 q.h.)

Financial management and operation of bank and nonbank financial institutions and their role in the economy. Discusses objectives, services, asset management, liquidity, pricing, capital adequacy, and sources of financing and profitability in a changing economic and regulatory environment. Lectures, discussions, and case studies. Prereg. FI 4302. Not open to students who have taken FI 4330 or FI 4335.

FI 4336 Risk Management and Insurance (3 q.h.)

Emphasizes the functional area of corporate risk management. Covers such topics as organizing and controlling the risk management function; identifying, measuring, controlling, and financing risk; selecting the best method of risk treatment; and implementing and monitoring risk management. Topics of exposure analysis include property, liability (public, employer, products, officers and directors, and professionals), income, and extraordinary expense losses. Covers treatment methods such as self-insurance and commercial insurance. Includes recent developments such as tort reform, integration of risk management with managerial finance with special emphasis on pensions, profit sharing plans, and international considerations. *Prereq. FI* 4302.

FI 4360 Speculative Markets (3 q.h.)

Studies futures contracts and options contracts, their rapid growth in speculative markets, and the uses of these contracts. Both individual investors and institutional investors such as portfolio managers, banks, multinational corporations, and mutual funds can now minimize their exposure to movements in stock prices, exchange rates, and interest rates by following active and dynamic portfolio strategies that employ these new instruments. Prereg. FI4411 or instructor's permission.

FI 4383 Personal Financial Planning (3 q.h.) Development of financial planning expertise useful to those considering careers as personal financial planners. Includes budgeting, insurance, taxes, estate planning, basic investment vehicles and strategies, and related legal aspects. Prereq. FI 4301.

FI 4403 Financial Strategy (Reserved) (3 q.h.)

Financial management using the casemethod approach. Includes advanced capital budgeting, capital structure. Decisionmaking, dividend policy, leasing, convertibles and warrants, mergers, failures and reorganization, and the timing of financial policy. Prereg. FI 4302 and 80 q.h.

FI 4411 Investment Management (Reserved) (3 q.h.)

Relationship between the economy and stock prices. Covers corporate analysis, earnings, dividends, and cash flow and introduces portfolio analysis. Studies technical analysis versus fundamental factors. Prereq. FI 4310 and 80 q.h.

FI 4421 Credit Management (Reserved)

Forms of credit and collection services, including analysis of financial statements, determination of credit-worthiness, creditors' rights, adjustment bureau operations, credit insurance, and guarantees. Prereq. FI 4320 and 80 q.h.

FI 4426 Financial Control (Reserved) (3 q.h.) Development and application of variable budgets, planning and control of capital expenditures, computer applications in profit planning, cash flow planning and control, cost-profit-volume analysis, performance reporting, and analysis of budget variations. *Prereg. FI* 4325 and 80 q.h.

FI 4450 International Finance (Reserved)

(3 q.h.)

Introduction to international financial management in the multinational corporation. Analyzes basic problems and finance considerations involved with international investments, trade, and payments. Also covers planning in the international environment related to exchange rates, financial strategy, sources of capital, working capital management, fund flows, and management control through accounting and financial reporting. *Prereq. FI 4302 and 80 q.h.*

FI 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

FI 4601 Honors Program 2 (4 q.h.) See FI 4600.

FI 4602 Honors Program 3 (4 q.h.) See FI 4600.

FI 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

FI 4702 Independent Study 2 (3 q.h.) See FI 4701.

FI 4703 Independent Study 3 (3 q.h.) See FI 4701.

FI 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

FI 4801 Advanced Tutorial 2 (3 q.h.) See FI 4800.

HEALTH INFORMATION ADMINISTRATION

Currently enrolled students should plan their course of study with the program director to avoid duplication of courses.

HIA 4300 Medical Terminology (4 q.h.) Analysis and definition of medical terms. Study of anatomical, diagnostic, operative symptomatic and pathological terms relating to all body systems. *Prereq. BIO 4175, BIO 4176, BIO 4177 or equiv.*

HIA 4315 Health Information Administration 1 (3 q.h.)

Introduction to health information systems covering health information history, numbering, filing, security and the health information specialist's relationship to the health facility. Stresses quantitative and qualitative analysis of the health record with emphasis placed on licensing and accrediting standards for health records. *Prereq. BIO* 4175, *BIO* 4176, *BIO* 4177 or equiv. and HIA 4300.

HIA 4316 Health Information Administration 2 (3 q.h.)

Study of the preservation and retention of health records, the legal aspects of health information, the study of the basic principles of abstracting and compiling statistics for health care facilities, and the preparation of statistical reports and vital registration. *Prereq. HIA 4315.*

HIA 4328 Nomenclature and Classification 1 (3 q.h.)

Designed to develop basic student competencies in the use of ICD-9-CM coding system, introduce the major coding systems used today in health care delivery systems, identify issues related to coding and data quality and the uses of coding for index development. Prereq. BIO 4175, BIO 4176, BIO 4177 or equiv., HIA 4300, HIA 4315 or instructor's permission.

HIA 4329 Nomenclature and Classification 2 (3 q.h.)

Designed to develop advanced student competencies in the use of ICD-9-CM coding system. Continuation of HIA 4328. *Prereq. HIA* 4328.

HIA 4335 Clinical Practicum 1 (3 q.h.) First of three clinical practice affiliations will emphasize the technical aspects of health information administration. This clinical will include admitting procedures, health record analysis and retention, release of information, coding and indexing. *Prereq. HIA 4316 and HIA 4329*.

HIA 4336 Clinical Practicum 2 (2 q.h.)
The second of three clinical practice affiliations is designed to introduce students to non-traditional health information systems. Students affiliate at long term care facilities, community health centers, HMO's, mental health facilities, VNA's, etc. The health information needs of these facilities are em-

phasized. Students are also introduced to the role of the health information consultant within non acute care settings. Prereq. HIA 4400 and HIA 4335.

HIA 4337 Clinical Practicum 3 (3 q.h.)

The final clinical affiliation emphasizes the organizational and managerial aspects of health information systems. Students are required to do special management projects under the direction of the clinical preceptor. Experience in Quality Assurance programs within hospitals and health care settings is also gained. Prereq. HIA 4431, HIA 4410 and HIA 4336.

HIA 4400 Specialized Health Information Systems (3 q.h.)

Study of non-traditional aspects of health information administration. Special focus is on the management of health information systems in ambulatory, long term care, home care and psychiatric settings. Tumor registry is also studied. Prereg. HIA 4316 and HIA 4329.

HIA 4410 Quality Assurance (4 q.h.) Introduction to utilization review, PRO requirements, quality assurance and risk management in health facilities with emphasis on methodology for development of criteria and tool development and the performance of monitoring and evaluation of patient care, physician and provider performance. Evaluation on monitoring as current method of cost and quality control will also be addressed. Prereg. HIA 4400 or permission of instructor.

HIA 4430 Health Information Management 1 (3 q.h.)

Focus is on the organization and management of a Health Information Department within the health care setting. Stresses management principles and practices utilized in health information systems. Management skills necessary to develop organization charts, policies, job descriptions and job procedures are reviewed. The course is designed to develop the student's ability to plan, organize, actuate and control through the principles of management and the practice of health information administration. Prereg. HMG 4100, HIA 4329 and HIA 4400.

HIA 4431 Health Information Management 2 (3 q.h.)

Focus is on the management of Health Information Department within the health care

setting. Emphasis is placed upon productivity within the hospital and the Health Information Department. Hospital and departmental budgeting, cost control mechanisms, forms design and office layout will also be reviewed. Review of contracting will also be studied. This course is a continuation of HIA 4430. Prereg. HIA 4430.

HIA 4500 Health Information Computer Systems (3 q.h.)

Introduction and review of current computer applications being used by Health Information Departments in traditional and alternative health care facilities. Emphasis is placed on information systems relating to health/ patient records. Management of health information databases, software applications and systems selection. Prereq. COM 4101 and HIA 4400.

HIA 4520 Topics in Health Information

Administration (3 q.h.)

Designed to include an extension and expansion of new or updated issues in Health Information Administration. Current issues will be introduced in a seminar fashion focusing on training and development, resume writing and interviewing techniques, stress management, classification and coding, data quality, health care finance and computer trends and application. Prereg. HIA 4410, HIA 4500, HIA 4531.

HIA 4521 Seminar in Health Information

This course is designed to allow students to reflect on the elements of personal and interpersonal change as these elements apply to supervisory and managerial responsibilities within the health information administration profession. Students will study problem definition, problem solving and various methods of instituting creative change. Prereg. HIA 4431 or HMG 4411.

HIA 4530 Health Information Systems Analysis (3 q.h.)

Analysis and design of health information systems. Assessment and decision making applications of computer resources in patient/health information management. Concepts and current methods of computerizing patient/health records. Prereg. HIA 4431 and HIA 4500.

HIA 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HIA 4701 Advanced Tutorial 2 (3 q.h.) See HRA 4700.

HIA 4800 Independent Study (3 q.h.) Each student will work with the Health Information Administration Program Director to select a topic and/or project to be extensively reviewed and studied. This independent study project is designed to give students the opportunity to explore in-depth a subject relevant to their interests. It is designed to give them the opportunity to study a problem, present a proposal, carry out a course of action and to prepare both a written and oral presentation of their activity. Students are required to present their research to HIA faculty and fellow students using professional audiovisual aids. Prereg. HMG 4411 and HIA 4431.

HEALTH MANAGEMENT

HMG 4100 Managing Health Services Organizations 1 (formerly Hospital Organization and Management 1) (3 q.h.) * Study of hospital organizational structure and administration. Focuses on the complex nature of health administration, its interdependent relationships and organizational strategy. Prereq. HMG 4301 or permission of the instructor.

HMG 4101 Managing Health Services Organizations 2 (formerly Hospital Organization and Management 2) (3 q.h.) * Continuation of HMG 4100, emphasizing organizational issues and management techniques. *Prereq. HMG 4100*.

HMG 4103 Managing Health Services Organizations (Intensive) (formerly Hospital Organization and Management Intensive) (6 q.h.) * Same as HMG 4100 and HMG 4101.

HMG 4200 Health Science Statistics (3 q.h.) This course introduces the gathering, display, interpretation and manipulation of data as well as the fundamentals of research design in the health care arena. Descriptive statistics such as mean, median, mode, standard deviation as well as sampling protocols

will be addressed. Inferential statistics including the research and null hypothesis, confidence limits and the application of Chisquare and degrees of freedom are highlighted. The role and use of probability in sampling and application are also discussed. Internal and external reporting needs as well as primary and secondary source documents will be studied. *Prereq. MTH 4111 or equiv.*

HMG 4215 Health Law (3 q.h.)
Basic hospital legal issues relating to corporate and individual liability. Includes an analysis of consent and competency in health care, emphasizing bioethical questions raised by the removal of life-support systems.

HMG 4260 Senior Seminar in Health Care Management (1 q.h.) Offered Spring Quarter only.

A review of current health care management topics, expanding on topics covered in HMG 4429. Must be taken concurrently with HMG 4429.

HMG 4300 Home Health Care (3 q.h.) Programs and techniques for providing effective community home health care and the impact of these programs on the health care delivery system.

HMG 4301 Health Care Delivery Systems (3 q.h.) *

The structure, function, and organization of health care services.

HMG 4310 Principles and Practices of Community Health 1 (3 q.h.)

Community health care activities. Emphasizes community health promotion and the coordination and integration of medical and self-care activities with the needs, goals, and resources of the community.

HMG 4311 Principles and Practices of Community Health 2 (3 q.h.) Continuation of HMG 4310. Emphasizes specific community health problems. *Prereq. HMG 4310*.

HMG 4325 Health Planning and Regulation (3 q.h.)

Analysis of past and present interventions that affect the supply and demand side of the health care system at the community, state, regional, and national levels. Planning and

^{*}It is strongly recommended that this course be taken at the beginning of the student's course of study.

regulations are discussed in the context of political considerations influencing their implementation and effectiveness.

HMG 4390 The Patient's Impact on Decision-Making (3 q.h.)

Explores some of the personal dimensions of illness and treatment and the nature of the relationships between ill people and those trying to care for them. Emphasis on how this interaction effects and influences health management decisions.

HMG 4400 Health Care Financial Management 1 (3 q.h.)

Introduction to health care financial management, including issues in fund accounting, control, and reimbursement. *Prereq. FI* 4301.

HMG 4401 Health Care Financial Management 2 (3 q.h.)
Continuation of HMG 4400. Prereq. HMG 4400.

HMG 4411 Research for Managers (3 a.h.)

Provides students with an awareness of the research process and the scientific methods. Types of research design and appropriate approaches to research problems will be covered from both the perspective of a consumer of research data and from that of a person doing research in real world settings. Emphasis will be placed on integrating the research process into the professional decision-making process in the real world. Prereq. HMG 4200 or equiv.

HMG 4429 Health Care's Changing Environment (2 q.h.) Offered Spring Quarter only.

Health care delivery systems are experiencing a multitude of changes. Keeping up with the changes and anticipating future changes are the subjects covered in a series of five seminars.

HMG 4440 Health Care Operations Management (3 q.h.)

An applications-oriented case course focusing on selected operations management planning, restructuring, and control problems common to hospitals and other health service organizations. *Prereq. HMG 4101 and HMG 4301*.

HMG 4445 Health Care Marketing and

Communication 1 (3 q.h.)
The "how" and "why" of marketing in health care. Presents basic principles, including formulating a marketing plan, strategic marketing practices, and specific marketing for specialized organizations such as HMOs and mental health nursing homes.

HMG 4446 Health Care Marketing and Communication 2 (3 q.h.)

Continuation and expansion of topics covered in HMG 4445. *Prereg. HMG* 4445.

HMG 4550 Contemporary and Controversial Health Care Issues 1 (3 q.h.)

Study of current health care problems. Emphasizes the interrelationships between the economic, social, political, and environmental factors involved in the development and delivery of health care.

HMG 4551 Contemporary and Controversial Health Care Issues 2 (3 q.h.) Continuation of HMG 4550. *Prereq. HMG* 4550.

HMG 4580 Information Processing in Health Care (3 q.h.)

Introduction to computer applications and management in health care facilities, including the evolution and application of computer use in health, clinical, and business information systems; patient care; management; public health; and reimbursement. The information flow of clinical and nonclinical patient data is applied to the principles of information system life-cycle development. The role of the health manager in selecting, implementing, and evaluating information systems for health care facilities is considered.

HMG 4600 Long-Term Care Administration 1* (6 q.h.)

Organization of care for the long-term and chronically ill patient. Examines the goals, purposes, and design of long-term care facilities as well as budgeting, financing, capital funding, and administration. *Prereq. HMG* 4101.

HMG 4601 Long-Term Care Administration 2* (6 q.h.)

Study of internal and external systems pertinent to the long-term care facility. Examines such topics as the nursing unit, the role of the physician, therapies, licensing agencies, hos-

^{*}Available this year; offered every other year.

pitals, and methods for improving services. Prereq. HMG 4600 or equiv. or permission of the instructor.

HMG 4602 Long-Term Care Administration 3* (6 q.h.)

Examination of long-term care institutions and their impact on the health care industry. Considers the nature and problems of aging and the care of the elderly in the home, in the community, and in institutions. A general survey and summary of the Massachusetts Nursing Home Administrators Licensure Examination is included. *Prereq. HMG 4601 or equiv. or permission of the instructor.*

HMG 4610 Principles and Practices of Community Mental Health (3 q.h.)

Introduction to the principles of community mental health, emphasizing the development, implementation, operation, delivery, and use of community mental health services.

HMG 4650 Health Management Practicum 1 (6 q.h.)

Working in conjunction with a preceptor, the student performs independent work within an administrative setting. Projects include problem identification, data gathering, analysis of alternatives, and implementation of a plan of action. Students must have completed 75 percent of the degree requirements before registering for this course. Applications for registering must be submitted one full quarter prior to the desired starting date. Contact the program office at 617-373-2818 for direction sheet and petition form.

HMG 4651 Health Management Practicum 2 (6 q.h.) A continuation of HMG 4650.

HMG 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HMG 4701 Advanced Tutorial 2 (3 q.h.) See HMG 4700.

HMG 4801 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details.

HMG 4802 Independent Study 2 (3 q.h.) See HMG 4801.

HUMAN RESOURCES MANAGEMENT

HRM 4301 Organizational Behavior 1 (3 q.h.)

This course is designed to provide a fundamental presentation of the dynamics of organizational life. Emphasis is placed on individual and interpersonal behavior in a work setting. Primary focus is on managerial applications of the organizational sciences and included topics such as motivation, communications, and leadership.

HRM 4302 Organizational Behavior 2

Expanding on the fundamentals of HRM 4301, this course highlights critical issues associated with a changing domestic and international work force, productivity, and development of effective organizational structures. Other topics include stress, counseling, employee rights, and group dynamics. *Prereq. HRM* 4301.

HRM 4304 Organizational Behavior Intensive 1 and 2 (6 q.h.) Same as HRM 4301 and HRM 4302.

· HRM 4309 Labor Relations (3 q.h.)

An examination of the development, current status and role of organized labor and management structures. The rights and responsibilities of employer organizations, individual employees and their influence on labor relations will be studied. Collective bargaining and grievance procedures will be introduced within the legal framework under which they function. Student participation will be required during case analysis and exercises.

HRM 4310 Human Resource Management (formerly Personnel Management 1)

(3 q.h.)
Study of the role of the human resources manager and department. Particular focus on the techniques of employee forecasting, recruitment, compensation and employee relations. Case study and exercises will also deal with critical issues around affirmative action and employee safety.

*Course offered every other year. Available this year.

HRM 4320 Techniques of Employee

Selection (3 q.h.)

Fundamental and advanced methods of recruitment, selection and placement techniques are covered. This includes wellknown methods such as interviewing and employee testing as well as controversial methods such as handwriting analysis and drug testing.

HRM 4321 Wage and Salary Administration (3 q.h.)

Wage and salary determination, including merit and incentive plans, wage and salary structure, compensation methods, and the impact of employer-employee relations on compensation systems.

HRM 4322 Employee Benefits (3 q.h.)

Study of private and public problems related to job and worker income security. Includes unemployment compensation, training and employment services, private guaranteed income, retirement pension plans, and disability and group insurance.

HRM 4324 Creative Problem Solving (3 q.h.) Opportunity to learn and practice new ways of thinking. Discusses ways to sense and analyze problems, develop ideas, and evaluate and implement solutions, and examines the attitudes and climates conducive to creative thinking. Also provides methods for developing imagination, the key part of the creative process.

HRM 4325 Training and Development in Organizations (3 q.h.)

Explores the basics of training in a variety of settings in organizations. Special emphasis is placed on training and development as a human resource function by providing an overview of the principles of adult learning, needs assessment, goal setting, and design and evaluation.

HRM 4333 Employment Rights (3 q.h.) This course examines legal and societal issues surrounding and including discrimination, affirmative action, minimum wage, hours of employment, health and safety, among others. Current rulings and cases will focus students on critical employment rights, challenges facing individuals, businesses and society. Not open to students who have taken HRM 4330 and HRM 4331.

HRM 4334 Human Resource Information

Systems (3 q.h.)

This course will explain the effective management of computer-based methods in such areas as workforce planning, skills inventory, payroll, and government report generation. Basic techniques of data collection and system design and implementation will be discussed. Students will learn to use information systems to solve human resource problems in a cost-effective manner.

HRM 4342 Strategic Planning for HRM (formerly Strategy Development in HRM)

(3 q.h.) In business organizations, the HRM manager is expected to have vision, purpose, and the ability to translate such vision into a concrete and implementable strategic plan. Students will learn to develop plans around

HRM 4345 Comparative International Labor Relations Systems (3 q.h.)

HRM policies. *Prereg. HRM 4310.*

Comparison and contrast of selected international labor relations systems with that of the United States, including recent developments such as worker participation and codetermination. Research and preparation of position paper by the student; class discussion. *Prereq. HRM 4302*.

HRM 4346 Negotiations in Labor Management (3 q.h.)

Negotiation skills, the use of mediation and fact-finding in collective bargaining agreements, the interpretation and application of such agreements, and the use of arbitration. Student participation in simulated negotiation and grievance procedures. *Prereq. HRM* 4302.

HRM 4347 Managing People in Interna-

tional Settings (3 q.h.)

This course deals with effective human resource management in international and cross-cultural environments. The student will investigate the selection, orientation and training of personnel for work in multicultural environments. Focusing on the management of the international employee in the United States and abroad, effective cross-cultural communication and behavior will be stressed. *Prereg. HRM 4302*.

HRM 4415 Leadership (Reserved) (3 q.h.) In this course, the leadership function in a variety of organizational settings is studied. Using a contingency approach, students ex-

plore a range of possible leadership behaviors, relating the appropriateness of a particular style to a number of situational factors. Readings provide an opportunity to explore several contingency theories of leadership and cases allow for the application of these models. Prereq. HRM 4302 or HRM 4304 and 80 q.h.

HRM 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

HRM 4601 Honors Program 2 (4 q.h.) See HRM 4600.

HRM 4602 Honors Program 3 (4 q.h.) See HRM 4600.

HRM 4701 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq. 96 q.h., 3.0 q.p.a.*

HRM 4702 Independent Study 2 (3 q.h.) See HRM 4701.

HRM 4703 Independent Study 3 (3 q.h.) See HRM 4701.

HRM 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HRM 4801 Advanced Tutorial 2 (3 q.h.) See HRM 4800.

HEALTH SCIENCE

HSC 4210 Basic Nutrition (3 q.h.) Introduction to nutrition and foods. Focuses on current scientific knowledge of nutrition and how this knowledge can guide an individual toward making appropriate food choices.

HSC 4220 Basic Pharmacology (3 q.h.) Introduction to the major classes of drugs. Presents the mode of action, common side effects, dosage, pharmaceutical forms, rate and route of administration, and known interactions and toxicities of the most commonly used drugs. Prereq. BIO 4177, CHM 4113, or equiv., or instructor's permission.

HSC 4301 Pathophysiology 1 (formerly Mechanisms of Disease 1) (3 q.h.)

The pathophysiology of major diseases. Discusses diagnosis and treatment, emphasizing inflammation, immunology, infectious disease, oncology, endocrine disorders, and trauma. *Prereq. BIO 4177 or equiv.*

HSC 4302 Pathophysiology 2 (formerly Mechanisms of Disease 2) (3 q.h.) Continuation of HSC 4301, using an organ-system approach to disease. Emphasizes cardiovascular, gastro-intestinal, pulmonary, and musculo-skeletal diseases. *Prereq. HSC* 4301.

HSC 4310 Public Health 1 (3 q.h.) Study of principles of public health and current mental and physical health problems. Includes communicable diseases, mental health, maternal and child health, official, voluntary, and international health organizations, and alcoholism. Also examines federal, state, and community resources mobilized to aid in prevention, identification, treatment, and rehabilitation.

HSC 4311 Public Health 2 (3 q.h.) Continuation of HSC 4310. Includes environmental health, chronic diseases, preventive medicine, and public health education.

HSC 4315 Environmental Problems and Health (3 q.h.)

Environmental conditions on land and in the air and water, including the causes of pollution, its effects on human and other life, and a general discussion of current control methods. Emphasizes the significance of environmental problems for the individual.

HSC 4320 Training and Development in the Health Professions 1 (3 q.h.) Educational program designed for the practitioner, including program planning, teaching strategies, and the development and evaluation of educational objectives.

HSC 4321 Training and Development in the Health Professions 2 (3 q.h.) Continuation of HSC 4320. Emphasizes program implementation and evaluation and student motivation. *Prereq. HSC* 4320.

HSC 4350 Introduction to Environmental Health and Safety (3 q.h.) This course highlights key aspects of the Environmental Health and Safety field. Topics include biological safety, industrial hygiene, gneral safety, toxiocology, radiation protection, environmental protection, and hazardous waste management will all be covered. regulatory agencies such as the National Institute for Health (NIH), the Occupational Safety and Health Administration (OSHA), the Nuclear Regulatory commission (NRC), and the Environmental Protection Agency (EPA) will be discussed along with their functions and areas of responsibilities. Prereq. entery level chemistry and biology.

HSC 4380 Mental Health and Counseling

(3 q.h.)

This course is designed to assist students in becoming more willing and able to reach out to school age children from a base of self-understanding and to aid them in deepening their human capacity to recognize and respond to the emotional dimensions of many health-related situations. Additionally, the student will apply the knowledge gained in a school setting. *Prereq. PSY 4352 and PSY 4280.*

HSC 4475 Methods of School Health Education (3 q.h.)

This course is designed to assist the entry level health education in the development of competencies and skills necessary to function effectively in the health promotion fields. Major emphasis will be on concepts of planning and delivering health education programs.

HSC 4600 Advanced Nutrition (3 q.h.) Study of food chemistry, nutrition, and physiology as applied to diet. Includes recent developments in normal nutrition and a critical review of the literature and experimental data on which principles of human nutrition are based. *Prereg. HSC 4210.*

HSC 4601 Advanced Pharmacology (3 q.h.) Continuation of HSC 4220. Includes routes of administration of drugs, side effects, variations in potency and efficacy, structure and its relationship to toxicity, allergy, resistance and duration. Drug groups discussed include: Antineoplastic agents, bronchactive drugs, histamines and antihistamines, drugs affecting central respiratory center, muscle relaxants, anesthetics and vitamins. Contemporary drug abuse will be discussed. Also covered: synergism and antagonism. Prereq. HSC 4220 or equiv.

HSC 4610 Geriatric Nutrition (3 q.h.) Integration of basic nutrition principles with the most current information on the aging process. Reviews state, local, and federal nutrition programs in terms of services, eligibility, and effect upon the elderly. Prereq. knowledge of basic nutrition or instructor's permission.

HSC 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HSC 4701 Advanced Tutorial 2 (3 q.h.) See HSC 4700.

HSC 4801 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq. 96 q.h., 3.0 q.p.a.*

HSC 4802 Independent Study 2 (3 q.h.) See HSC 4801.

HSC 4803 Independent Study 3 (3 q.h.) See HSC 4801.

HISTORY

HST 4101 The Civilization of the Ancient and Medieval Worlds (formerly History of

Civilization 1) (3 q.h.)

Development of human institutions up to the end of the Middle Ages. Emphasizes the continuities and changes that occur within civilizations and the similarities, differences, and relationships that exist among contemporary civilizations around the world. Explores implications of each historical period for our lives today.

HST 4102 The Civilization of the Early Modern World (formerly History of Civili-

zation 2) (3 q.h.)

The period from the end of the Middle Ages to the French Revolution in 1789. Emphasizes the intellectual, technological, and political expansion of Europe and the reactions of the rest of the world to it. Special attention is given to such topics as the rise of dynastic states, the rise and fall of mercantilism, the scientific revolution, exploration and gunpowder technology, and order and revolution.

HST 4103 The Civilization of the Modern World (formerly History of Civilization 3)

The world from 1789 to the present. Includes capitalism, industrialization, nationalism, imperialism, the clash of ideologies in the nineteenth century, and a study of total war in the present century. Based on this historical study, the prospects for the future will be explored.

HST 4110 History of Civilization A (4 q.h.) Major ideas and institutions of civilizations from ancient times to 1648. For Alternative Freshman-Year students only. Not open to students who have taken HST 4101 or HST 4102.

HST 4111 History of Civilization B (4 q.h.) Continuation of HST 4110, covering the period since 1648. For Alternative Freshman-Year students only. Not open to students who have taken HST 4102 or HST 4103.

HST 4201 American History 1763-1848 (formerly American History 1) (3 q.h.) America from 1763 to 1848, with attention to the development of political, economic, and social institutions in the new republic.

HST 4202 American History 1848-1917 (formerly American History 2) (3 q.h.) The United States from 1848 to 1917, with attention to the Civil War, economic development thereafter, and the Progressive Era.

HST 4203 American History Since 1917 (formerly American History 3) (3 q.h.) The United States since 1917, an age of urbanized industrialism and international involvement and crisis.

HST 4241 The Historian's Craft (3 q.h.) Discussion of ways in which the historian studies the past, with emphasis on research and writing.

HST 4250 Historical Geography (3 q.h.) Studies the impact of geography on history. This course may be used to satisfy the Standard I geography requirement for students seeking Massachusetts certification as a secondary education teacher of social studies or history.

HST 4263 Oral History (3 q.h.)

Learning history from those who lived it, students conduct tape-recorded interviews of first-hand experiences in a selected area of twentieth-century history. Students need access to an audiotape recorder.

HST 4265 Introduction to Public History (3 q.h.)

Topics include the new discipline of public historical archiving, the construction of historical displays and exhibits, the preservation and restoration of historic sites and structures, the editing of historical documents and journals, the operation of historical societies, and the production of historical media programs.

HST 4270 History and Film (3 q.h.)

Explores the manner in which filmmakers use historical subjects for their projects and the ways in which historians analyze films as primary sources for research. Presents both dramatic and documentary films in combination with readings from various source and interpretive materials. This course meets for three hours each week. (Thematic Group D)

HST 4301 Technological Transformations of Society (3 q.h.)

The relation between technological innovations and the world in which they take place. Discusses conditions necessary for discovery and innovation and the impact of technology on the political, economic, and social environment. (Thematic Group D)

HST 4302 History of Flight and Space Travel (3 q.h.) Beginning with the ancient Greeks' and Leonardo da Vinci's dreams of flight, the course traces the history of nonpowered flight from the balloon experiments of the Montgolfier brothers to contemporary hanggliders; of powered flight from the Wright brothers through supersonic transport; and of rocketry and space travel from their beginnings through the *Enterprise*. (Thematic Group D)

HST 4303 History of the Automobile (3 q.h.) History of the automobile in Europe and America. Includes invention, production, impact on social and economic life, and the problems of pollution and energy. (Thematic Group D)

HST 4304 History of Energy (3 q.h.) Examination of how human beings have mobilized the forces of nature to survive, to alter and improve their lifestyles, and to dominate their fellow human beings. Emphasizes the transformation from one energy source to the available alternatives and the reasons for the choices made. Includes the change from human power to animal and machine power, the energy crisis of the sixteenth century, the turning from wood to water and coal power, the rising use of electricity and fossil fuels, the birth of the Atomic Age, and the contemporary history of the oil crisis. (Thematic Group D)

HST 4305 Health and Sickness: Historical

Perspectives (3 q.h.)

A survey of medical theories from ancient times to the present, emphasizing concepts of disease causation and the health care systems or institutions derived from them. Medical theory and practice are related to both the general history of the period and the particular political, economic, or social circumstances that influenced attitudes regarding health care.

HST 4401 Ancient Middle East (3 q.h.) Study of ancient cultures and peoples in the Middle East to the rise of Islam.

HST 4403 History of the Jews 1 (3 q.h.) Cultural and intellectual survey of the Jews from the end of antiquity to early modern times.

HST 4404 History of the Jews 2 (3 q.h.) Role and position of the Jews in modern history. (Thematic Group A)

HST 4407 Ancient Greece (3 q.h.)
Origin and development of Greek civilization.

HST 4408 Ancient Rome (3 q.h.) Ancient Roman civilization, emphasizing the rise of the Republic and the decline of the Empire.

HST 4410 The Middle Ages (3 q.h.) History of Europe from the fall of Rome to 1350.

HST 4412 Islamic History (3 q.h.) History of the Muslim Arab world from the seventh century to the end of the Abbasid Caliphate in 1258.

HST 4414 History of the Early Christian Church (3 q.h.)

The history of Christianity from the time of Christ to 800, with attention to Jewish-Christians, St. Paul, and the Papacy.

HST 4415 The Age of Luther, Calvin, and Loyola (3 q.h.)

The Protestant and Catholic Reformations from intellectual, social, economic, political, and artistic perspectives from the later Middle

Ages to 1648, with attention to historiography and conflicting interpretations.

HST 4419 Renaissance Civilization (3 q.h.) Examination of the period from 1350 to 1600 from the vantage points of politics, literature, art, and religion. The course is built around the telecourse films entitled "Renaissance" (available for viewing in Snell Library), the text and reader that accompany them, and collateral reading. Instruction is in classroom and via computer. Not open to students who intend to receive credit for HST 4418.

HST 4424 Europe 1870-1921 (3 q.h.)
Background of World War I, including nationalism, militarism, imperialism, and the alliance system, as well as the making of war and peace. (Thematic Group C)

HST 4425 Europe Since 1921 (3 q.h.) Europe after World War I; World War II; the Cold War; and the efforts to unify the continent. (Thematic Group C)

HST 4434 Family History (3 q.h.) History of the family in Europe and America from 1600 to the present. Includes the changing nature and role of the family, marriage and divorce, child rearing, and aging. (Thematic Group A or E)

HST 4435 Women in European History (3 q.h.)

Historical examination of the position and role of women in European life. (Thematic Group A or E)

HST 4452 The French Revolution and Napoleon (3 q.h.)

Examines the nature of the French Revolution and the era of Napoleon, with attention to their impact on France and Europe and with special attention to historiography, conflicting interpretations, and contemporary documents.

HST 4455 Ireland Since 1800 (3 q.h.) The Irish question in British politics from the Act of Union to the present. (Thematic Group A)

HST 4460 Germany from Weimar to Auschwitz (3 q.h.)

Examination of Germany's history form 1918 to 1945, with special attention to the brilliance of the Weimar cultural revolution and its later persecution by the Nazis, the appeal

of Nazism and the Third Reich, the roots of anti-Semitism and racism, and World War II and the Holocaust. (Thematic Group C)

HST 4466 Eastern Europe Since 1500 (3 q.h.) An examination of the salient historical factors which have driven the evolution of Eastern Europe from the Congress of Buda in 1500 which allied Poland and Hungary in anticipation of German and Russian encirclement through the fateful year 1989 which introduced the end of the Iron Curtain and post-World War II domination by the Soviet Union.

HST 4468 Russia Since 1917 (3 q.h.)

Russian domestic affairs and international relations from the revolutions of 1917 to the present, with special attention to the rise and ultimate fall of Communism. (Thematic Group C)

HST 4470 History of Communism in the Twentieth Century (3 q.h.)

Examination of modern scientific socialism, generally known as communism, with special reference to its history in the Soviet Union, Eastern Europe, China, Cuba, and elsewhere and to the reasons for its rise, expansion, and decline. (Thematic Group C)

HST 4473 Poland in the Twentieth Century (3 q.h.)

Examines forces leading to Poland's national resurrection in 1918 after more than a century of being a nation without sovereignty; the interwar years of reconstruction and consolidation; partition and near annihilation by Hitler and Stalin in World War II; Cold War engulfment by Communism; Solidarity and the achievement of freedom.

HST 4501 American Indians (3 q.h.) Survey of native Americans from pre-Columbian times to the present. (Thematic Group A)

HST 4502 Colonial America (3 q.h.) Topics include exploration and settlement of North America; the development of political, social, and economic institutions; and the international rivalry to 1763.

HST 4503 The American Revolution (3 q.h.) British-American relations after 1763; war and peace.

HST 4505 The Making of the American Constitution (3 q.h.)

Beginning with the weaknesses of the Articles of Confederation, this course examines the movement for a stronger national government, the drafting of the Constitution and the first twelve amendments, and their implementation in the early years of the Republic.

HST 4506 American Constitutional History, 1835-1910 (3 q.h.)

American constitutional development in the time of Chief Justice Taney; the constitutional impacts of secession and Civil War; post-Civil War Supreme Court cases involving economic affairs, social problems, and individual rights in the terms of Chief Justices Chase, Waite, and Fuller.

HST 4507 American Constitutional History Since 1910 (3 q.h.)

American constitutional development from the Progressive Era to the present, with attention to amendments to the Constitution, the growth of the national government, and Supreme Court cases involving economic affairs, civil liberties, and civil rights.

HST 4508 American Constitutional History: Legislative, Executive, and Judicial

Powers (3 q.h.)

An in-depth study of the ways in which the three branches of the American government have exercised the powers afforded them by the Constitution since 1788. Emphasis on the tax and commerce powers of Congress, the foreign affairs and war powers of the President, and the review power of the Supreme Court.

HST 4509 American Constitutional History: Liberties, Privileges, and Immunities (3 q.h.) An in-depth exploration of the historical evolution of various rights protected by the American Constitution. Topics include freedom of speech, press, association, and religion; equal protection; and the right to privacy.

HST 4510 The American Civil War (3 q.h.) The history of the American Civil War based on the public broadcasting system telecourse. By incorporating the soldier's view and a variety of other perspectives on the conflict, the programs, lectures, and print materials provide students with a solid foundation of knowledge upon which to base their understanding of the war.

HST 4511 Populism and Progressivism

(3 q.h.)

Topical history of the United States from 1890 to 1920, concentrating on its reactions to industrialization and urbanization.

HST 4512 The Age of Roosevelt (3 q.h.) Topical history of the United States in time of world war, prosperity, depression, and war again.

HST 4513 Contemporary America (3 q.h.) The American people from the close of World War II to the present. (Thematic Group C)

HST 4518 History of Social Welfare in

America (3 q.h.)

The history of private and public relief of the poor and needy in America from colonial times to the present.

HST 4523 American Diplomatic History (3 q.h.)

Selected topics in the history of American foreign relations and policy since 1789.

HST 4530 American Economic History

(3 q.h.)

Selected topics in the development of the capitalist economy in the United States, with attention to the role of government since 1789. (Thematic Group B)

HST 4531 American Business History (3 q.h.)

Examines the rise of business in America, the role of the corporation, horizontal and vertical combinations, business and labor, and business and government.

HST 4532 History of American Book

Publishing (3 q.h.)

The history of book publishing in America from 1640 to the present, with emphasis on the production and marketing of trade and text books, copyright, and the rise of giant houses in the twentieth century. (Thematic Group B or C)

HST 4533 American Newspaper History

(3 q.h.)

Newspapers in America from 1690 to the present, with emphasis on the transition from weeklies to dailies, the rise of the political press, the birth of penny papers, the rivalry of Pulitzer and Hearst, and forces making for standardization in the twentieth century. (Thematic Group B or C)

HST 4534 American Magazine History

(3 q.h.)

Magazines in America from 1740 to the present, with emphasis on the rise of general and special interest magazines, rivalries, and current problems facing the industry. (Thematic Group B or C)

HST 4535 History of the American Film

Industry (3 q.h.)

The production, distribution, and exhibition of feature films in America from the 1890s to the present, with emphasis on the development of studios in California, the rise and fall of the contract system, censorship, government regulation, and foreign investment. (Thematic Group B, C, or D)

HST 4536 American Radio History (3 q.h.) Radio in America from the days of Marconi to the present, with emphasis on the coming of commercial stations, the rise of networks, government regulation, the golden age of radio programs, the impact of television, and the nature of radio at the end of the twentieth century. (Thematic Group B, C, or D)

HST 4537 American Television History

(formerly HST 4306) (3 q.h.)

Examines the evolution of the medium from the 1920s to the present with emphasis on the development of networks, programming, advertising, the impact of cable, and television's regulatory structure. (Thematic Group B, C, or D)

HST 4540 American Social History (3 q.h.) Selected topics in the life of the American people since 1789. (Thematic Group B or E)

HST 4542 Women in American History

(3 q.h.)

Historical examination of the position and role of women in American life. (Thematic Group B or E)

HST 4543 African-American History (3 q.h.) History of African Americans from colonial times to the present. (Thematic Group A)

HST 4544 The Negro Baseball Leagues: Baseball and Race Relations in America

(3 q.h.)

Covers the history of African-Americans in baseball from the early days of the major leagues in the late nineteenth century through the eventual integration of baseball and the demise of the Negro Leagues in the late 1950s. The exclusion of blacks from the major

leagues, the formation of black teams and the Negro Leagues and how these events reflected the larger society will be discussed. The lives of notable personalities, like Moses Fleetwood Walker, the first black player in the major leagues, Rube Foster, the organizer of the Negro Leagues, and Satchel Paige will be studied. There will be guest lectures and videos. (Thematic Group A or B)

HST 4546 Americans at Play: A History of

Leisure (3 q.h.)

An examination of 300 years of leisure from the colonial quilting bee to modern professional football, with special attention to class, gender, and ethnicity and to attempts to regulate leisure activity. (Thematic Group B)

HST 4547 History of Sport in America (3 q.h.)

History of the major sports and their impact on American life. (Thematic Group B)

HST 4548 American Heroes (3 q.h.)

Comparative exploration of the nature and functions of heroism in American history, using such individuals as George Washington, Jesse James, Amelia Earhart, Martin Luther King, and Bruce Springsteen as specific case studies. (Thematic Group B)

HST 4549 American Inquisitions (3 q.h.) Study of inquisitions in modern America, concentrating on the suppression of radical movements by both government and private groups. (Thematic Group C)

HST 4550 Boston to 1822 (3 q.h.)

Study of the Town of Boston from its establishment in 1630 to 1822 and the development of political, economic, and social institutions.

HST 4551 Boston Since 1822 (3 q.h.) Study of the City of Boston, its annexations, and the changes in the ethnic nature of the population.

HST 4560 American Legal History to 1850

(3 q.h.)

Focuses on the Common Law tradition and the emergence of a distinctly American law with emphasis on such factors as the American Revolution, Jacksonian Democracy, slavery, and control of the indigent and deviant.

HST 4561 American Legal History since 1850 (3 q.h.)

Focuses on major legal developments since the mid-nineteenth century with emphasis on torts, contract and criminal law, and legal realism.

HST 4563 History of Criminal Justice in America (3 q.h.)

The history of crime and punishment in America from colonial times to the present.

HST 4602 Contemporary Latin America (3 q.h.)

Social, economic, and political development of the Latin American republics in the twentieth century. (Thematic Group A or C)

HST 4603 The United States, Central America, and the Caribbean (3 q.h.)

Latin American countries nearest the United States and most affected by U.S. policies, particularly Cuba, Mexico, Nicaragua, El Salvador, and Guatemala. Emphasizes the historical background of current issues. (Thematic Group C)

HST 4604 Mexico Since 1848 (3 q.h.) Political, economic, social, and cultural evo-

lution of Mexico since the Mexican-American War. Other topics and issues include the Juarez *Reforma*, Diaz's dictatorship, the Revolution of 1910, and the on-going Institutional Revolution.

HST 4606 Canadian History (3 q.h.)

The history of Canada from the time of the European settlement to the present, with emphasis on Canadian relations with the U.S. and the background of the Quebec separatist movement.

HST 4611 Africa Since 1885 (3 q.h.)

The European impact on Africa, the rise of African nationalism, and the emergence of independent African states and their relations with other nations. (Thematic Group C)

HST 4622 Modern Middle East (3 q.h.)
The Middle East since 1914, with attention to Zionism, Pan-Arabism, the effects of two world wars, and the postwar settlements. (Thematic Group C)

HST 4623 Contemporary Middle East 1: The Struggle for Palestine (3 q.h.) Examines the history of the region from the end of the Second World War to the present with special emphasis on the Arab-Israeli

dispute and its impact on the countries involved in or affected by it. (Thematic Group C)

HST 4624 Contemporary Middle East 2:

The Persian Gulf (3 q.h.)

Examines the history of the region from the era of the First World War to the present with special emphasis on the impact of oil and the Cold War, the Iran-Iraq war, and the Iraqui seizure of Kuwait. (Thematic Group C)

HST 4632 China Since 1850 (3 q.h.)

A century of China's history, emphasizing the Western impact on Chinese civilization, China's struggle to maintain independence, and the victory of communism in the midtwentieth century. (Thematic Group A)

HST 4636 Japan Since 1850 (3 q.h.) Analysis of Japanese domestic developments and foreign relations since the mid-nineteenth century. (Thematic Group A)

HST 4640 Third World Women (3 q.h.) Role of women in the less developed, Third World areas, with special emphasis on aspects of change, development, and continuity. (Thematic Group E)

HST 4643 Peacekeeping and Arms Control (3 q.h.)

A history of twentieth century efforts to control, regulate, stabilize, or prevent international violence, including the Hague and Geneva Conventions, the League of Nations and the United Nations, alliance systems and deterrence, bilateral and multilateral treaties, verification issues and technologies, and other relevant matters. (Thematic Group C or D)

HST 4644 War and Peace in the Nuclear Age (3 q.h.)

The history of the nuclear age based on a Corporation for Public Broadcasting/Annenberg telecourse. By incorporating a variety of perspectives on the nuclear past—political, historical, philosophical, and scientific—the programs, lectures, and accompanying print materials provide students with a solid foundation of knowledge upon which they can base their views of the nuclear future. (Thematic Group C)

HST 4645 History of the Vietnam Wars (3 q.h.)

History of military conflict in Vietnam, with attention to the rise of the Viet Minh during World War II, the struggle against the French

in the first Indochina War, the impact of the Cold War, and the involvement of the United States after 1950 in Laos and Cambodia (now Kampuchea) as well as in Vietnam. Emphasizes the role of communism and nationalism in Indochina and the motives for American intervention. Includes films revealing American reaction to the escalating conflict. (Thematic Group C)

HST 4646 The Legacy of the Vietnam Wars (3 q.h.)

Examines the impact of the American involvement in Vietnam on American foreign and domestic policy as well as on American attitudes toward themselves and toward the world in the period since 1975. Emphasis will be placed on post-war interpretations of that conflict, on its effects on American ideals, on ideas of military preparedness, on the economy, on popular culture, and on the "healing processes" that have marked the last decade. An assessment of the extent to which Vietnam continues to haunt the American people and the extent to which the country has put the experience behind it will be made and an agenda for future action set forth by the class. (Thematic Group C)

HST 4811 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq.* 96 q.h., 3.5 q.p.a. (Thematic Group F)

HST 4812 Honors Program 2 (4 q.h.) See HST 4811.

HST 4813 Honors Program 3 (4 q.h.) See HST 4811.

HST 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HST 4816 Advanced Tutorial 2 (3 q.h.) See HST 4815.

HST 4821 Field Work in History (6 q.h.) Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 24 for details. Prereq. HST 4101, 4102, 4103, 4202, 4203, 4241, and Program Director's approval.

HST 4822 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a. HST 4823 Independent Study 2 (3 q.h.) See HST 4822.

HST 4824 Independent Study 3 (3 q.h.) See HST 4822.

HST 4825 Directed Study in Historical Geography (3 q.h.)

Offers directed study in geography's impact on history. This course may be used to satisfy the Standard I geography requirement for students seeking Massachusetts certification as a secondary education teacher of social studies or history. (Not a regularly scheduled course. Students must contact Liberal Arts Office to register to work with an instructor.)

HOTEL AND RESTAURANT MANAGEMENT

HTL 4301 Introduction to Hotel and Restaurant Management (3 q.h.) Thehospitality industry in today's economy. Emphasis is on industry growth and development, management problems, and principles of hotel and restaurant management.

HTL 4303 Front Office Management (3 q.h.) Role and functions of the front office as they relate to the operation of the entire hotel. Covers front office structure, registration, payment, reservations, and night audit.

HTL 4304 Hotel and Restaurant Law (3 q.h.) Introduction to the fundamental laws, rules, and regulations applicable to the hospitality industry. Includes hospitality management policies that minimize the danger of legal liability; innkeeping; restaurant management; alcoholic beverage control; labor laws; and legislation affecting the hospitality industry.

HTL 4305 Food Preparation 1 (3 q.h.) Introduction to the fundamentals of food preparation and service, with emphasis on food service industry terminology and equipment. Includes menu planning, requisitioning, pricing, and preparation and service. In addition to classroom instruction, students prepare food in a small-quantity laboratory. (Laboratory fee.)

HTL 4306 Food Preparation 2 (3 q.h.) Continuation of HTL 4305. Prereq. HTL 4305. (Laboratory fee.) HTL 4307 Food Service Sanitation (3 q.h.) Organization of the maintenance and engineering function. Includes the technical information necessary to establish effective preventive programs. Details the fundamentals of sanitation for food service employees and includes practical guidelines for safe food handling. Provides the future hospitality manager with an opportunity for certification in Applied Food Service Sanitation from the National Institute for the Food Service Industry.

HTL 4308 Food and Beverage Cost Control (3 q.h.)

ward cost controls through analysis of all aspects of the food service operation. Includes classification of food service facilities, cost accounting, purchasing, inventory, production control methods, and the essentials of food and beverage controls. Develops management-mindedness through examination of organizational structures of food service and specific topics, such as menu pricing, break-even analysis, and cost-volume-profit theory. Emphasizes forecasting and achieving a profitable bottom line.

HTL 4309 Managerial Accounting for the Hospitality Industry (3 q.h.)

Financial practices and systems used in the hospitality industry. Analyzes controls, budgeting, financial statements, and specialized industry accounting procedures. *Prereq. ACC* 4102.

HTL 4310 Hospitality Marketing Management (3 q.h.)

The market in which the hospitality industry operates. Students have the opportunity to develop and implement a marketing plan to meet operational goals. *Prereq. MKT 4301*.

HTL 4313 Introduction to Tourism (3 q.h.) Introduction to the science, art, and business of attracting, transporting, and accommodating visitors and graciously catering to their needs and wants. Includes sociological and psychological aspects, marketing, and the economics of tourism.

HTL 4320 Food Preparation (Intensive) (6 q.h.)

Same as HTL 4305 and HTL 4306. (Laboratory fee.)

HTL 4322 Consumer Food Preparation

(3 q.h.)

Concepts and skills learned in HTL 4305 and HTL 4306 are applied in a restaurant setting. Preparation of complete menus for a service dining room, including appetizers, soups, salads, entrees, vegetables, and desserts. Stresses costing, menu planning, quantity recipe production, menu terminology, and kitchen organization. Coordinates food production with students in the dining room service course (HTL 4324). Work in a classic kitchen stations on a rotating basis. Prereq. HTL 4306 or HTL 4320. (Laboratory fee.)

HTL 4324 Dining Room Beverage Operation and Preparation (3 q.h.)

Introduction to the operation of a dining room with beverage service. Includes organization, personnel, methods of table service, menu terminology, table arrangement, requirements for supplies and equipment, sales promotion techniques, and revenue control. Students serve meals prepared by students in the food production course (HTL 4322). Also covers wine service and alcoholic beverage preparation and control. (Laboratory fee.) Prereg. HTL 4301.

HTL 4331 Professional Chef's Training (formerly HTL 4325 Intensive Chef's Train-

ing) (6 q.h.)

This course is for the individual who already has a culinary background and wishes to continue to upgrade his/her skills and understanding of the changing role of today's food industry. The course explores two avenues, a greater understanding between chef and management, along with the preparation of finer cuisine for hotels, restaurants, clubs, catering and buffet. The practical demonstrations will include hors d'oeuvres through fancy desserts. Tableside and wine cookery, ice carving and extensive menu planning will be included. An all-round way to gain more culinary expertise. (Laboratory fee.)

HTL 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq.* 96 q.h., 3.5 q.p.a.

HTL 4601 Honors Program 2 (4 q.h.) See HTL 4600.

HTL 4602 Honors Program 3 (4 q.h.) See HTL 4600. HTL 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

HTL 4702 Independent Study 2 (3 q.h.) See HTL 4701.

HTL 4703 Independent Study 3 (3 q.h.) See HTL 4701.

HTL 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

HTL 4801 Advanced Tutorial 2 (3 q.h.) See HTL 4800.

INTERDISCIPLINARY

INT 4200 Workshop in Creativity (formerly

The Creative Process) (3 q.h.)

Thought processes that allow individuals to be creative or original in all areas of life. Through interactive exercises and special projects in composition and problem-solving, students can learn how to tap their own creativity. Students are asked to create an original piece of art, music, literature, or research.

INT 4203 Independent Study in Cultural

Heritage (3 q.h.)

Student will work one-on-one with a faculty member to complete a project he/she designs to study the interconnected ways in which art, music, literature, religion, and specific historical events have shaped our culture, values, and self-perceptions. Projects should deal with one or more themes included in Cultural Heritage studies for Liberal Studies B.A. degree (see page 128). Prereq. 27 q.h. in Cultural Heritage Studies or instructor's permission. Open only to Liberal Studies degree candidates.

INT 4204 Independent Study in Contemporary Studies (3 q.h.)

Student will work one-on-one with a faculty member to complete a project he/she designs to analyze and discuss selected problems of the contemporary world, using analytical tools appropriate to the disciplines contained within the Liberal Studies curriculum (see page 128). Prereq. 27 q.h. in Contemporary Studies or instructor's permission. Open only to Liberal Studies degree candidates.

JOURNALISM

JRN 4112 Writing for Media 1 (formerly Fundamentals of Newswriting) (3 q.h.) Introduction to how to write leads, organize basic news stories, gather facts, and interview. Analyzes news values and the structure of news organizations.

JRN 4113 Writing for Media 2 (formerly Newsgathering and Reporting) (3 q.h.) Writing of multisource stories, both news and feature; public affairs reporting; advanced interviewing techniques; and legal issues. Prereq. JRN 4112 or instructor's permission.

JRN 4114 News Reporting Techniques

(3 q.h.) Introduction to writing in-depth stories requiring significant research and introduction to investigative reporting. Includes libel, privacy invasion, and other legal matters affecting news media. *Prereq. JRN 4113 or instructor's permission*.

JRN 4300 Photojournalism (3 q.h.) Introduction to how to use the camera, the negative, and the print in news or feature stories. Includes weekly photo shooting assignments.

JRN 4330 The Newspaper Cartoon: Its Techniques and History (3 q.h.)
How the political cartoon and comic strip have influenced American culture from the late 1800s through the 20th century. This course is for those interested in the political scene as well as those interested in careers in cartooning. Being an artist is not a prerequisite.

JRN 4335 Public Relations Basics (3 q.h.) Concepts, components, and methods of public relations, including planning and research, processes of influencing public opinion, and policies concerning corporate and institutional relations with the media and various publics.

JRN 4336 Public Relations Practice (3 q.h.) Study of specific practices and techniques employed in public relations, especially in relation to the handling of information and organization of activities and events. Also discusses how to define PR "targets" and how to deal with such publics as employees, stockholders, and consumers.

JRN 4337 Public Relations Problems (3 q.h.) Research and communication techniques used to solve public relations problems and practical experience with individual PR projects, programs, and campaigns.

JRN 4338 Public Relations for Nonprofit Organizations (3 q.h.)

Explores functions of the public relations practitioner in a non-profit setting, including media relations, development, external and internal relations, and strategic planning. Students will be expected to develop a public relations plan for a non-profit institution.

JRN 4340 Press, Power, and Critical Issues

Study of the impact of news media coverage on major political, economic, and other issues. The increasingly complex relationship between American society and print and broadcast journalism is analyzed.

JRN 4341 Mass Media and the Law (3 q.h.) Examination of libel, privacy, protection of sources and broadcast regulation. Conflicts between journalists and jurists over prior restraint, access to government information, and fundamental First Amendment issues also are discussed. Students will be expected to complete a research assignment in a law library.

JRN 4349 Advertising Basics (3 q.h.) Study of the evolution of advertising, including social, economic, and legal aspects; how advertising agencies and departments function; how advertising fits into the marketing mix; and the basic steps of research.

JRN 4350 Advertising Copywriting (3 q.h.) Writing effective advertising copy for both print and electronic media; coordinating copy with other creative functions. Elements of good ad copy are analyzed and common pitfalls are reviewed.

JRN 4351 Advertising Practice (3 q.h.) Study of media planning and selection. Includes defining objectives and determining target audiences; establishing the advertising budget; analyzing the market and the competition.

JRN 4480 Copyediting (3 q.h.) Practice in the many facets of the editorial process, including editing copy, writing heads, and laying out pages. The course also includes photo selection, cropping, and outline writing. *Prereq. JRN 4112*.

JRN 4522 Magazine Writing (3 q.h.) Practice in writing and freelancing magazine articles. Analysis of magazine markets, preparation of query letters, techniques of research, and submission of manuscript. Travel, howto, profile, personal experience, and other formats included.

JRN 4540 Writing the Non-Fiction Manuscript (3 q.h.)

This course surveys today's market for the journalistic, non-fiction book and articles and describes methods for selecting a researchable topic, finding the facts, writing the query letter, writing the manuscript, and doing revisions and final draft.

JRN 4560 Developing Writing Style (3 q.h.) Developing and refining personal style in journalistic, non-fiction writing. Emphasis is placed on original and effective approaches to features, columns, reviews, editorials and longer works.

JRN 4815 Advanced Tutorial 1 (3 q.h.)
Opportunity to take an upper-level course independently. See page 24 for details.

JRN 4816 Advanced Tutorial 2 (3 q.h.) See JRN 4815.

JRN 4910 Internship (1 q.h.)
The Journalism Internship is an opportunity for students to obtain supervised professional experience (related to coursework) at an on-site location. See page 25 for details. Prereq. Program Director's approval.

LANGUAGE — FRENCH

LNF4101 Conversational French 1 (formerly Elementary French 1) (4 q.h.) Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNF 4102 Conversational French 2 (formerly Elementary French 2) (4 q.h.) Continuation of grammar study, with oral and written exercises. *Prereq. LNF 4101 or equiv.*

LNF4103 Conversational French 3 (formerly Elementary French 3) (4 q.h.) Reading of French prose of increasing difficulty, with written and oral exercises based on the materials read and practice in conversation. *Prereq. LNF 4102 or equiv.*

LNF 4104 Intermediate French 1 (4 q.h.) Review of grammar, with practice in composition and conversation. *Prereq. LNF 4103 or equiv.*

LNF 4105 Intermediate French 2 (4 q.h.) History of French civilization, with discussions and conversation. *Prereq. LNF 4104 or equiv.*

LNF 4106 Intermediate French 3 (4 q.h.) Intensive reading of modern French prose, with practice in conversation. *Prereq. LNF* 4105 or equiv.

LNF 4815 French Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq.* 87 q.h.

LNF 4816 French Advanced Tutorial 2 (4 q.h.) See LNF 4815.

LNF 4817 French Advanced Tutorial 3 (4 q.h.) See LNF 4815.

LANGUAGE — GERMAN

LNG 4101 Conversational German 1 (formerly Elementary German 1) (4 q.h.) Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNG 4102 Conversational German 2 (formerly Elementary German 2) (4 q.h.) The more difficult points of grammar, particularly the uses of the subjunctive mood. *Prereq. LNG 4101 or equiv.*

LNG 4103 Conversational German 3 (formerly Elementary German 3) (4 q.h.) Reading of simple German prose, with oral and written exercises based on material read. Conversation in German is encouraged. *Prereq. LNG 4102 or equiv.*

LNG 4104 Intermediate German 1 (4 q.h.) Review of grammar, with practice in composition and conversation. *Prereq. LNG 4103 or equiv.*

LNG 4105 Intermediate German 2 (4 q.h.) History of German civilization, with discussions and conversation. *Prereq. LNG 4104 or equiv.*

LNG 4106 Intermediate German 3 (4 q.h.) Intensive reading of modern German prose, with practice in conversation. *Prereq. LNG* 4105 or equiv.

LNG 4815 German Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq.* 87 q.h.

LNG 4816 German Advanced Tutorial 2 (4 q.h.) See LNG 4815.

LNG 4817 German Advanced Tutorial 3 (4 q.h.) See LNG 4815.

LANGUAGE — ITALIAN

LNI 4101 Conversational Italian 1 (formerly Elementary Italian 1) (4 q.h.)

Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNI 4102 Conversational Italian 2 (formerly Elementary Italian 2) (4 q.h.)

Continuation of grammar study, with oral and written exercises. *Prereq. LNI 4101 or equiv.*

LNI 4103 Conversational Italian 3 (formerly Elementary Italian 3) (4 q.h.)

Reading of Italian prose of increasing difficulty, with written and oral exercises based on the material read. Practice in conversation. Prereq. LNI 4102 or equiv.

LNI 4104 Intermediate Italian 1 (4 q.h.) Review of grammar, with practice in composition and conversation. Prereq. LNI 4103 or equiv.

LNI 4105 Intermediate Italian 2 (4 q.h.) History of Italian civilization, with discussions and conversation. Prereq. LNI 4104 or equiv.

LNI 4106 Intermediate Italian 3 (4 q.h.) Intensive reading of modern Italian prose, with practice in conversation. *Prereq. LNI* 4105 or equiv.

LNI 4815 Italian Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq. 87 q.h.*

LNI 4816 Italian Advanced Tutorial 2 (4 q.h.) See LNI 4815.

LNI 4817 Italian Advanced Tutorial 3 (4 q.h.) See LNI 4815.

LANGUAGE — JAPANESE

LNJ 4101 Conversational Japanese 1 (formerly Elementary Japanese 1) (4 q.h.) Basic, practical Japanese, emphasizing the essentials of grammar, pronunciation, progressive acquisition of a core vocabulary, and the use of current, idiomatic expressions.

LNJ 4102 Conversational Japanese 2 (formerly Elementary Japanese 2) (4 q.h.) Continuation of LNJ 4101. Progressive acquisition of practical skills. *Prereq. LNJ 4101 or equiv.*

LNJ 4103 Conversational Japanese 3 (formerly Elementary Japanese 3) (4 q.h.) Continuation of LNJ 4102. *Prereq. LNJ* 4102.

LNJ 4104 Intermediate Japanese 1 (4 q.h.) Review of grammar, with practice in composition and conversation. *Prereq. LNJ 4103 or equiv.*

LNJ 4105 Intermediate Japanese 2 (4 q.h.) History of Japanese civilization, with discussions and conversation. *Prereq. LNJ 4104 or equiv.*

LNJ 4106 Intermediate Japanese 3 (4 q.h.) Intensive reading of Japanese prose, with practice in conversation. *Prereq. LNJ 4105 or equiv.*

LNJ 4225 Japanese Culture (3 q.h.)
By studying various aspects of Japanese cultural history, education, work ethics, malefemale relations, and other areas, students gain insight into the Japanese mentality and how this homogeneous race is surviving in a heterogeneous world.

LNJ 4815 Japanese Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq. 87 q.h.*

LNJ 4816 Japanese Advanced Tutorial 2 (4 q.h.) See LNJ 4815.

LNJ 4817 Japanese Advanced Tutorial 3 (4 q.h.) See LNJ 4815.

LANGUAGE — SWEDISH

LNN 4101 Conversational Swedish 1 (4 q.h.) Acquisition of basic oral skills by introduction of the essentials of Swedish grammar, with extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNN 4102 Conversational Swedish 2 (4 q.h.) Continuation of LNN 4101. Introduces Swedish prose of moderate difficulty. *Prereq. LNN 4101 or equiv.*

LNN 4103 Conversational Swedish 3 (4 q.h.) Continuation of LNN 4102. Prereq. LNN 4102 or equiv.

LNN 4815 Swedish Advanced Tutorial 1 (4 q.h.)

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq.* 87 q.h.

LNN 4816 Swedish Advanced Tutorial 2 (4 q.h.) See LNN 4815. LNN 4817 Swedish Advanced Tutorial 3 (4 q.h.) See LNN 4815.

LANGUAGE - RUSSIAN

LNR 4101 Conversational Russian 1 (formerly Elementary Russian 1) (4 q.h.) Essentials of grammar, practice in pronunciation, and progressive acquisition of a basic vocabulary and idiomatic expressions.

LNR 4102 Conversational Russian 2 (formerly Elementary Russian 2) (4 q.h.) Continuation of grammar study, with oral and written exercises. *Prereq. LNR 4101 or equiv.*

LNR 4103 Conversational Russian 3 (formerly Elementary Russian 3) (4 q.h.) Reading of Russian prose of increasing difficulty, with written and oral exercises based on the material read and practice in conversation. *Prereq. LNR 4102 or equiv.*

LNR 4225 Russian Culture and Society (3 g.h.)

Study of various aspects of Russian cultural history, education, work ethics, male-female relations, and other areas, for insight into the Russian mentality.

LNR 4815 Russian Advanced Tutorial 1

Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereq. 87 q.h.*

LNR 4816 Russian Advanced Tutorial 2 (4 q.h) See LNR 4815.

LNR 4817 Russian Advanced Tutorial 3 (4 q.h.) See LNR 4815.

LANGUAGE — SPANISH

LNS 4101 Conversational Spanish 1 (4 q.h.) Acquisition of basic oral skills by introduction of the essentials of Spanish grammar. Extensive practice in pronunciation and acquisition of an idiomatic core vocabulary.

LNS 4102 Conversational Spanish 2 (4 q.h.) Continuation of LNS 4101. Introduces Spanish prose of moderate difficulty. Prereq. LNS 4101 or equiv.

LNS 4103 Conversational Spanish 3 (4 q.h.) Continuation of LNS 4102. Continued stress on conversation, while building a solid vocabulary. Prereq. LNS 4102 or equiv.

LNS 4104 Intermediate Spanish 1 (4 q.h.) Review of grammar, with practice in composition and conversation. Prereg. LNS 4103 or equiv.

LNS 4105 Intermediate Spanish 2 (4 q.h.) Examination of Spanish civilization through texts of average difficulty. Intensive reading of modern prose, with occasional oral or written translation and conversation practice based on assigned readings. Prereq. LNS 4104 or equiv.

LNS 4106 Intermediate Spanish 3 (4 q.h.) Examination of Spanish-American civilization through texts of average difficulty. Intensive readings of modern prose, with occasional oral or written translations and conversation practice based on assigned readings. Prereq. LNS 4105 or equiv.

LNS 4200 Spanish for the Medical Profes-

sions (4 q.h.)

Students are introduced to the specialized discourse of the medical professions. The differences between oral and written language styles will be addressed, as well as the differing requirements for levels of style, ranging from informal to formal.

LNS 4815 Spanish Advanced Tutorial 1

(4 q.h.) Advanced Tutorial Option: When a student is unable to continue study of an upper-level language, or when a language course needed for a degree is not scheduled at appropriate intervals, arrangements can be made for the student to take three advanced tutorials for a total of twelve quarter hours. See page 24 for details. *Prereg. 87 g.h.*

LNS 4816 Spanish Advanced Tutorial 2 (4 q.h.) See LNS 4815.

LNS 4817 Spanish Advanced Tutorial 3 (4 g.h.) See LNS 4815.

MANAGEMENT

MGT 4101 Introduction to Business and Management 1 (3 q.h.)

Study of the setting and general structure of American business, including objectives and practices affecting the American standard of living. Examines the chracteristics of private enterprise and the nature and challenge of capitalism and other forms of economic enterprise. Introduces types of businesses, the structures of organizations, and the functions of management as well as what a managerial career involves, what problems must befaced, and what decisions must be reached.

MGT 4102 Introduction to Business and Management 2 (3 q.h.)

Methodologies in planning, organizing, direction, and controlling production, marketing, sales, and pricing within the American free enterprise system and in contrast to other business systems. Examines techniques for coping with the intricacies of systems management. Prereq. MGT 4101.

MGT 4013 Introduction to Business and Management 3 (3 q.h.)

Basic management concepts and techniques necessary to successful decision-making. Emphasizes management as a continuous, active process by introducing methods of designing an organization; understanding and dealing with people; evaluating the political, social, and economic environment; and effectively planning, directing, and controlling an organization. Prereq. MGT 4102.

MGT 4105 Introduction to Business and Management (Intensive) (6 q.h.) Same as MGT 4101 and MGT 4102.

MGT 4110 Survey of Business and Management (4 q.h.)

Introduction to the setting and general structure of American business, the characteristics of private enterprise, and the nature and challenge of capitalism and other forms of economic enterprise. Covers the forms of business, organizational structure, and functions of management. Through lectures and class discussion, students are given an overview of the methodologies used in planning, organizing, directing, and controlling the functions of production marketing, sales, pricing, and finance. For Alternative Freshman-Year students only.

MGT 4320 Managing Change (3 q.h.)

Application of managerial concepts and practices to real-world situations with policy or resource constraints. Explores decision making related to the impact of change on the organization and its personnel: develops a conceptual framework for handling change in one's own business career. *Prereq. MGT* 4102.

MGT 4323 Management and Leadership (formerly Motivation Management) (3 q.h.) Designed to help students differentiate between the managerial position as such and a leadership role, evaluating the impact of leadership and management styles on human behavior. Introduces and analyzes important motivation concepts through study of the working environment and the processes that influence both performance and outcome. *Prereq. MGT 4102*.

MGT 4328 Creating New Ventures (3 q.h.) The nature of entrepreneurship and potential for self-employment by the individual. Includes the sequence from generation of an idea through the design of a plan for owning and operating a small business.

MGT 4329 Managing Small Businesses (3 q.h.)

Study of managerial operations of a small business. Presents issues and problems encountered by those considering entrepreneurial and small business endeavors, including the facets of financing, planning, market research, and strategy for small businesses.

MGT 4330 Essentials for Managers of Small Businesses (3 q.h.)

Designed for small business entrepreneurs or persons interested in running a small business. Covers fundamental business concepts, including ownership forms; ongoing market research, capitalization, and management and operating issues; personnel and benefits; risk management; tax considerations; operating finances; and small business strategic positioning. Generally offered in six half-day sessions.

MGT 4340 Small Business 1 (3 q.h.)

Development and completion of a full business plan for entrepreneurs or persons interested in operating a small business. Covers the nature and characteristics of entrepreneurship; personal analysis; generation of ideas and market identification; legal and tax ramification of ownership forms; marketing research and planning.

MGT 4341 Small Business 2 (3 q.h.)

The marketing research and development of the marketing plan portion of the overall business plan. Topics include new business capital requirements, including the differences in venture and equity funding; and developing the financial management plan portion of the overall business plan, along with business strategy implications, personnel matters, and the use of computers. *Prereq. MGT 4340*.

MGT 4348 Introduction to the Global Marketplace (3 q.h.)

This course explores the characteristics of international trade and business, industrial/economic/political realities, organizational ownership and structure, and cultural dimensions. Students gain important perspectives on handling international personnel, operations, and marketing functions. Classes use real-world examples of management success and failure in international areas.

MGT 4354 Management and the Environment (3 q.h.)

This course examines and discusses current rules and regulations addressing important and critical issues facing society as a whole the environment in which we work and live. It considers the effect on managerial decision-making imposed by environmental issues facing organizations; considers how rules and regulations apply to different industries; discusses role(s) played by governmental agencies in implementing regulations; and, how the agencies and our legal system are used in enforcement. Prospective organizational accountability, responsibilities and possible managerial actions/activity which may be required for dealing with both present and future environmental issues will also be discussed.

MGT 4357 Cultural Issues in International

Business (3 q.h.)

When a U.S. company opens an office in a foreign land, cultural clashes may occur. How does management cope and help its employees to cope with these differences? This course examines the problems of doing business in another country, including third-world countries.

MGT 4358 Today's Management Issues (3 q.h.)

Study business and management issues affecting today's management decisions. In-

cludes changes in our economic system and the economy; corporate culture; social responsibility; ethics; worker's needs, motivation, and satisfaction; demographics; and management-labor interactions. *Prereq. MGT* 4102.

MGT 4362 Advanced Managerial Seminar

(3 q.h.)

The managerial seminar provides upperlevel undergraduate students an opportunity to examine/research a broad managerial or an interdisciplinary set of organizational/managerial issues. Selection and focusing of the topic/theme is guided by the instructor and may be pertinent to their professional work, career preparation or personal enrichment. A variety of research techniques is available for use and written report of the undertaking is submitted. Prereq. 100 q.h. and completion of all core business courses in your major.

MGT 4410 Project Management Process: Planning and Implementation (Reserved) (formerly Project Planning and Control)

(3 q.h.)

The entire process of implementing a project, from project definition to the evaluation of feasibility, scheduling, and financial and budgetary factors. Management techniques and requirements are used in case analyses, along with the concept of using computer software to help oversee projects. Prereq. OM 4404 or OM 4301 and 80 q.h.

MGT 4411 Advanced Project Management

Process (Reserved) (3 q.h.)

This course broadens an operational and staff manager's conceptual knowledge and expands the usage for program/project management. Analyzing comprehensive cases—covering both products and services—students gain insight into the enlarging scope of business, operational and workplace activities where program/project management can be successfully applied. Expanding utilization makes a widening array of processes more efficient, productive, and contributes to better overall quality. *Prereq. MGT 4410.*

MGT 4446 International Business Management and Operations (Reserved) (formerly MGT 4456) (3 q.h.)

Principles and practices of international business, comparing domestic and international business activities, responsibilities, and influences. Explores the economic, social, po-

litical, and legal contexts of conducting b ness in a multinational environment and amines how the "foreign" factor in the bue ness equation influences behavior. *Prere-MGT* 4102.

MGT 4450 Business Policy 1 (Reserved)

(3 q.h.)

For advanced students building on all previous management courses and on numerous functional and procedural courses. Examines the total management process for formulating business strategy. Covers the development of corporate objectives, plans, and policies, emphasizing the interaction between the enterprise and its environment, both national and international. The economic and social responsibilities of business and managers are also considered. Prereq. 130 q.h. and completion of all core business courses in your major or minor.

MGT 4451 Business Policy 2 (Reserved)

(3 q.h.)

Study of organizational and administrative methods for converting plans into achievements. Explores concepts of strategic planning and implementation from the perspective of the general manager, with attention to top management functions, responsibilities, styles, values, and organizational relationships. Includes cases from profit and non-profit enterprises of various types. *Prereq. MGT* 4450.

MGT 4452 Business Policy Intensive (Reserved) (6 q.h.)

Same as MGT 4450 and MGT 4451. Prereq. 100 g.h.

MGT 4455 Manager and Society (Reserved)

(3 q.h.)

For managers, potential managers, and others interested in the national and international issues confronting business and industry in their relationships with governments, societies, and individuals. Includes issues of changing work environments and the variety of influences and pressures that need to be taken into account when making socially responsible business decisions. *Prereq. MGT* 4102.

MGT 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. Prereq. 96 q.h., 3.5 q.p.a. MG Ap+T 4601 Honors Program 2 (4 q.h.) tice MGT 4600.

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MGT 4701 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq. 96 q.h., 3.0 q.p.a.*.

MGT 4702 Independent Study 2 (3 q.h.) See MGT 4701.

MGT 4703 Independent Study 3 (3 q.h.) See MGT 4701.

MGT 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

MGT 4801 Advanced Tutorial 2 (3 q.h.) See MGT 4800.

MANAGEMENT INFORMATION SYSTEMS

Please note: Computer labs for students' completion of projects are available at Boston, Burlington, Dedham, Framingham, and Downtown Boston. Students may also complete projects on any IBM or IBM-compatible computer available to them.

MIS 4101 Introduction to Data Processing and Information Systems 1 (3 q.h.)

Introduction to data processing and computers, including an overview of data processing history, business data processing concepts, data processing organization, computer hardware, the internal representation of data, and data communication concepts. In-class demonstration of DOS, word processing, and spreadsheets.

MIS 4102 Introduction to Data Processing and Information Systems 2 (3 q.h.)

Continuation of MIS 4101. Concentrates on software and systems. Includes the systems-development life cycle, programming tools and program preparation, the use of computers for specific business applications, database management systems, and high-level programming and planning languages. Class consists of in-class demonstration by instructor on database software. *Prereg. MIS 4101*.

MIS 4103 Introduction to Data Processing and Information Systems (Intensive) (6q.h.) Covers material in MIS 4101 and MIS 4102 in one quarter.

MIS 4221 COBOL Programming 1 (3 q.h.) Beginning computer problem-solving and programming using COBOL. Includes structured flow-charting and programming, basic concepts, COBOL divisions and verbs, multi-page reporting, report totals, and logical control breaks.

MIS 4222 COBOL Programming 2 (3 q.h.) Continuation of MIS 4221. Includes table handling, (subscripting and indexing), internal sort concepts, (using, giving, input and output procedures), mass storage concepts (access methods, index file processing, random, and dynamic), and sequential and random file updating. *Prereq. MIS* 4221.

MIS 4230 PC Software for Professionals (formerly End User Software) (3 q.h.) Study of the large and rapidly growing collection of software geared toward the needs of the nontechnical end user. Includes discussion of various software packages such as spreadsheets, databases, and graphics. Not open to students who have taken MIS 4102 since Fall 1992.

MIS 4231 COBOL Intensive A (6 q.h.) Same as MIS 4221 and MIS 4222.

MIS 4235 Advanced COBOL Programming

(3 q.h.)
Several advanced programming disciplines and techniques for the COBOL programmer. Includes string and unstring, cell subroutines, multi-dimension tables, advanced index file processing, debugging techniques, and communications. Students work on major business projects, prepare and test several programs using the University computer system. *Prereg. MIS* 4222.

MIS 4236 Advanced PC Software (3 q.h.) Advanced skills in spreadsheets, graphics, database, and advanced commands in PC/MS-DOS. Includes lectures, in-class demonstrations, and extensive assignments that apply skills. Not for the first-time personal computer user. Prereq. MIS 4102 or equivalent.

MIS 4241 Programming in BASIC 1 (3 q.h.) Introduction to computer programming using BASIC. Includes arithmetic operations, variables, expressions, arrays, functions, and formatted printing. Students write, debug, and run a number of programs on the computer. Prereq. MIS 4102.

MIS 4242 Programming in BASIC 2 (3 q.h.) Continuation of MIS 4241. Covers more sophisticated BASIC programming techniques. Includes subroutines, nested loops, sorting, and file handling. Students write, debug, and run a number of programs on the computer. Prereq. MIS 4241.

MIS 4273 PC DOS (3 q.h.)

Introduction to the Disk Operating System (DOS), a collection of programs that manages the activities among personal computer components. Students have the opportunity to write one or more DOS batch routines. Prereq. MIS 4102.

MIS 4276 C Programming 1 (3 q.h.) Fundamentals of the C programming language, I/O operations, arithmetic operations, loops, arrays, character strings, functions. Structures, file organization (textfiles, randomaccess files). Pointers, queues, stacks,

MIS 4277 C Programming 2 (3 q.h.)

rings, binary trees.

Advanced programming techniques using C, recursion, address arithmetic, the prepro-. cessor, pointers vs. multidimensional arrays, pointers to functions, macros, nested structures, unions, file merging and sorting techniques, linked lists, command line arguments, binary trees, operations on bits, enumerated data types. *Prereq. MIS* 4276.

MIS 4278 C Programming 3 (3 q.h.)

This is the third course in the C Language series. Covers advanced techniques using C and C ++ programming language in a business-oriented environment. Ordered lists, queues, stacks, trees, multinode trees, relational databases, Qsort and research techniques are some of the topics. The use of C ++advanced functions are described by class lecture and reinforced by lab work. Prereq. MIS 4277.

MIS 4279 C Programming 1 and 2 Intensive (6 q.h.) Same as MIS 4276 and MIS 4277.

MIS 4282 Operating Systems Overview (3 q.h.)

Designed to introduce the student to the most frequently used operating systems-UNIX, PC-DOS, and MS WINDOWS. Through class lectures, reading assignments, and hands-on lab exercises, the student will examine the overall structure, genealogy, and basic commands of the three systems. Prereq. MIS 4102.

MIS 4283 Introduction to Windows Programming (3 q.h.)

Introduction to programming for the Microsoft Windows graphic environment using the C language. Covers Windows programming topics such as bitmaps, menus, icons, and dialog boxes, memory management, printing and Dynamic Link Libraries. Intended for those seeking a working knowledge of basic Windows programming techniques. Prereg. MIS 4276.

MIS 4301 Structured Systems Analysis and

Design 1 (3 q.h.)

Systems analysis and design cycle, with emphasis on the analysis phase. Includes the history and life-cycle of business information systems, the role of the systems analyst, analytical tools useful to the systems study process, development of feasibility studies, and presentation of study phase findings. Prereq. MIS 4102.

MIS 4302 Structured Systems Analysis and

Design 2 (3 q.h.)

Continuation of MIS 4301. Emphasizes the design phase and systems implementation. Includes detailed systems design procedures and techniques, system testing, specification and procedure writing, documentation, design of auditing and control procedures, performance measurement techniques, hardware and software selection and planning, and project management. Prereq. MIS 4301 or MIS 4401.

MIS 4305 Structured Systems Analysis and Design (Intensive) (6 q.h.) Same as MIS 4301 and MIS 4302.

MIS 4307 Communications and

Networking (3 q.h.)

Communications, networking, and distributed processing from the user's rather than the designer's point of view. Includes the economics of distributed processing, communications concepts, local-area networks, and vendor selection. Prereq. MIS 4302 or MIS 4402.

MIS 4320 VAX Overview (3 q.h.)

Introduces the student to the hardware and software of digital vax network. Logging on, use of a password, manipulating files, using text editor for programming, compiling simple programs and flowcharting a program flow are covered. Electronic mail is used to communicate on the network.

MIS 4321 UNIX I (formerly UNIX for C

Programmers) (3 q.h.)

Designed to provide an understanding of the Unix Operating System. Through reading assignments, lectures and lab exercises, the students will focus on the following topics: Files, text manipulation, editors, programming tools, comprehensive coverage of Unix utilities, e-mail and intermediate level shell programming. Prereq. MIS 4282 and MIS 4276.

MIS 4322 UNIX II (formerly UNIX Shell

Programming) (3 q.h.)

Designed to provide a comprehensive study of shell programming, including C shell programming, a knowledge of the more advanced Unix utilities like sed and awk, and a survey of the Internet tools, like finger, rlogin/telnet, ftp, whois, netfind, gopher, archie, world wide web, WAIS, USENET news, online communications and anonymous e-mail. *Prereq. MIS 4321*.

MIS 4342 Advanced Database (3 q.h.)

Focuses on designing a database for use in a relational database management system. Includes creating queries, linking files, cross indexing, designing forms and reports, and other advanced database techniques. Introduces the entity-relationship model. Requires implementing an application program. *Prereq. MIS* 4236.

MIS 4344 Business Presentation Graphics

(3 q.h.)

Students can learn how to create computerized presentation graphics. The basics of graphics are covered along with text, bar/line, area, pie, and organization charts. The draw/annotate feature is explored.

MIS 4350 Auditing Data Processing (3 q.h.) EDP audit techniques, programming, and operations, emphasizing EDP standard practices, procedures, documentation, and safety and security. Defines EDP business risks and related exposures, such as fraud, embezzlement, misuse or destruction of company as-

sets, and business interruption. Offers discussion of the EDP portion of accounting requirements of the Foreign Corrupt Practices Act of 1977. Course content is oriented toward EDP managers, internal auditors, and public accountants. *Prereq. MIS* 4102.

MIS 4360 Computer Privacy and Security

(3 q.h.)

Threats posed by and to modern electronic computers and their users. Includes a review of the issue of privacy and approaches, techniques, and tools used to safeguard computers. Uses actual case studies of computer abuse. *Prereq. MIS 4102*.

MIS 4401 Structured Systems Analysis and

Design 1 (Reserved) (3 q.h.)

Systems analysis and design cycle, with emphasis on the analysis phase. Includes the history and life-cycle of business information systems, the role of the systems analyst, analytical tools useful to the systems study process, development of feasibility studies, and presentation of study phase findings. *Prereq. MIS* 4102 and 80 q.h.

MIS 4402 Structured Systems Analysis and

Design 2 (Reserved) (3 q.h.)

Continuation of MIS 4401. Emphasizes the design phase and systems implementation. Includes detailed systems design procedures and techniques, system testing, specification and procedure writing, documentation, design of auditing and control procedures, performance measurement techniques, hardware and software selection and planning, and project management. Prereq. MIS 4401 or MIS 4301 and 80 q.h.

MIS 4405 Structured Systems Analysis and Design Intensive (Reserved) (6 q.h.) Same as MIS 4401 and MIS 4402.

MIS 4407 Communications and Networking (Reserved) (3 q.h.)

Communications, networking, and distributed processing from the user's rather than the designer's point of view. Includes the economics of distributed processing, communications concepts, local-area networks, and vendor selection. *Prereq. MIS* 4402 or MIS 4302 and 80 q.h.

MIS 4445 Database Management Systems

(Reserved) (3 q.h.)

Introduction to the database approach to design of integrated information applications. Covers the three methods of database

design; data structures; diagramming; data definition languages; data manipulation languages; database implementation and evaluation; and the role of the database administrator. Prereq. MIS 4222, MIS 4230, and MIS 4302 and 80 q.h. or MIS 4402.

MIS 4446 Information Systems for Management (Reserved) (3 q.h.)

Students learn how information technology (IT) supports corporate goals. Emphasis is on the management of IT rather than on computer technology or programming. Readings and case studies will illustrate how IT may be employed to support general management functions. Issues such as the types of information systems, the impact of information systems on individuals and organizations, outsourcing, and the use of IT as a weapon of competitive strategy will be discussed along with technological issues such as database management systems, electronic data interchange, decision support systems, and expert systems. Prereq. MIS 4102 or MIS 4103. (Not open to students who have taken MIS 4448.)

MIS 4485 Applied MIS Development

Project (Reserved) (3 q.h.)

Capstone systems course integrates knowledge and abilities gained through other computer-related courses in the curriculum, within a comprehensive systems development project. The student has a choice of two options. Option I is a systems analysis and system design of a small system which is usually personal computer-based. This includes the topics covered in MIS 4401 and MIS 4402 and requires the programming of two or three programs from the system designed. The final product is a complete system with operational programs. Option II is a detailed research project. The topic is selected by the student, approved and the scope defined by the instructor. The final product is a paper which covers the selected topic from various viewpoints. Prereq. MIS 4448.

MIS 4600 Honors Program 1 (4 q.h.)
Opportunity to undertake an in-depth research study project. See page 24 for details.

Prereg. 96 q.h., 3.5 q.p.a.

MIS 4601 Honors Program 2 (4 q.h.) See MIS 4600.

MIS 4602 Honors Program 3 (4 q.h.) See MIS 4600. MIS 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

MIS 4702 Independent Study 2 (3 q.h.) See MIS 4701.

MIS 4703 Independent Study 3 (3 q.h.) See MIS 4701.

MIS 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

MIS 4801 Advanced Tutorial 2 (3 q.h.) See MIS 4800.

MARKETING

MKT 4301 Introduction to Marketing 1 (3 q.h.)

This course consists of lectures, readings and small group discussions on the role of marketing in contemporary society, in the business enterprise, and in the nonprofit organization. Consideration is given to the planning, operation, and evaluation of marketing and promotional efforts necessary to the effective marketing of consumer and industrial products and services in both profit and nonprofit organizations.

MKT 4302 Introduction to Marketing 2

(3 q.h.)

Continuation of MKT 4301. Develops the link between marketing theory and practice. Covers specific marketing issues and problems. Includes case study analysis and current marketing issues. *Prereq. MKT 4301*.

MKT 4304 Introduction to Marketing (Intensive) (6 q.h.)
Same as MKT 4301 and MKT 4302.

MKT 4308 Direct Response Marketing

(3 q.h.)

Direct response marketing communicates directly with the prospective customer to create an immediate response. Topics include management of direct response programs in telemarketing, mail, catalog and print/broadcast media settings. Applications in consumer, business-to-business and non-profit areas are also discussed.

MKT 4310 Advertising Management 1

(3 q.h.)

This course focuses on the management of the advertising function in relation to a firm's overall marketing objectives. The course approaches the subject from the perspective of the user of advertising (e.g., product manager, marketing manager). Case studies and text material are used to help the student develop decision-making skills. *Prereq. MKT* 4301.

MKT 4315 Sales Management 1 (3 q.h.)

Allows student to develop effective selling skills. Examines the customer buying process and the company sales process. Discusses prospecting, preparation, presentation, and post-sale activities and introduces advanced selling techniques, such as team selling. Focuses on situations where personal selling is a major element of marketing strategy, such as industrial-product, professional-service, and high-technology marketing. *Prereq. MKT 4301*.

MKT 4320 Marketing Management (3 q.h.) This course is designed to provide training in marketing decision-making. Case studies simulating actual business settings are used to help students develop analytical abilities and sharpen their communication skills. Topics covered ranged from techniques used to analyze a market to the development of a total marketing strategy (product policy, pricing policy, promotion policy, and distribution policy). Prereq. MKT 4301.

MKT 4335 Public Relations 1 (3 q.h.) Introduction to the basic principles, purposes, and practices of public relations in both commercial and nonprofit organizations. Emphasizes organization, research, and writing fundamentals.

MKT 4336 Public Relations 2 (3 q.h.) Continuation of MKT 4335. Emphasizes the development of public relations programs for specific publics. *Prereq. MKT 4335*.

MKT 4340 Retail Management 1 (3 q.h.) Concepts and techniques of store operations and merchandise management. Focuses on the activities and contributions of various retailing institutions, such as independents, chains, dealerships, specialty stores, supermarkets, discount stores, and franchises. Also includes retail management, retail profit and loss, starting a retail business, store location, store planning, and the retail organization. *Prereq. MKT* 4301.

MKT 4341 Retail Management 2 (3 q.h.) Continuation of MKT 4340. Emphasizes store operations; merchandising planning, control, and management; pricing; buying; sales promotion; customer service; retail accounting; and expense management. *Prereq. MKT* 4340.

MKT 4411 Advertising Management 2 (Reserved) (3 q.h.)

Continuation of MKT 4310. Surveys why and how advertising works, and includes challenging and practical case studies. *Prereq.* MKT 4310 and 80 q.h.

MKT 4416 Sales Management 2 (Reserved) (3 q.h.)

This course is designed to help the student develop decision-making skills necessary for both building and maintaining an effective sales organization. Cases and readings are used to examine the strategic and operating problems of the sales manager. Major topic areas include the selling function, sales management at the field level, and the sales executive. *Prereq. MKT 4315 and 80 q.h.*

MKT 4430 Marketing Research 1 (Reserved) (3 q.h.)

Course focuses on providing students with an introduction to the field of marketing research from a user's point of view. Topics include problem definition, research objectives, research applications, information sources, and a discussion and evaluation of alternative methods for collecting data. *Prereq. MKT 4301 and 80 q.h.*

MKT 4431 Marketing Research 2 (Reserved)

(3 q.h.)

Course focuses on the techniques and procedures required to conduct high quality research studies. Topics include sampling techniques, questionnaire development, data collection methods, survey errors, and processing and analyzing research data. Course is taught from the viewpoint of the person who conducts market research studies. Prereq. MKT 4430 and 80 q.h.

MKT 4453 International Marketing (Reserved) (3 q.h.)

This course is designed to help familiarize the student with those aspects of marketing that are unique to international business within the framework of traditional functional areas of marketing. The focus is on the environment and the modifications of marketing concepts and practices necessitated

by environmental differences. Topics include cultural dynamics in international markets, political and legal environmental constraints, educational and economic constraints, international marketing research, international marketing institutions, and marketing practices abroad. *Prereq. MKT* 4320 and 80 q.h.

MKT 4457 Competitive Strategy (Reserved)

(3 q.h.)

A capstone marketing course, required of all students with a marketing concentration. The focus is on the formulation of marketing strategy at a policy level and its implementation in a dynamic environment. *Prereq. MKT* 4320 and 80 q.h.

MEDICAL LABORATORY SCIENCE

MLS 4104 Introduction to Phlebotomy (4 q.h.) (Offered Winter and Summer

Quarters.)

This course emphasizes the role of the phlebotomist as part of the health care team. Topics will include proper patient identification, patient relationship, equipment, venipuncture procedure, anatomy and physiology, terminology and pertinent others.

MLS 4108 Phlebotomy Applied Study (2 q.h.) (Offered Fall and Spring Quarters.) This course develops the confidence and experience needed to become an expert phlebotomist. Varieties of venipunctures will be performed under the supervision of clinical instructors in an affiliated clinical site. Prereq. MLS 4104.

MLS 4301 Medical Laboratory Science Orientation (2 q.h.) (Offered Fall Quarter.) Scope, responsibilities, opportunities, and educational requirements for the medical laboratory science professions. Medical terminology and laboratory mathematics are included.

MLS 4321 Hematology* (3 q.h.)

Basic hematological techniques, including discussion of the differential smear and observation of the normal morphology of human red cells, white cells, and platelets. (Laboratory fee.) Prereq. BIO 4105 or equiv. Not open to medical technology majors.

MLS 4322 Morphologic Hematology 1† (3 q.h.)

Morphologic and etiologic classification of the anemias. Related diagnostic tests are discussed. (Laboratory fee.) Prereq. MLS 4321 or equiv.

MLS 4323 Morphologic Hematology 2† (3 q.h.)

Studies of pathologic and physiologic deviations of the white cells series as observed in leukemias and infections. Some animal hematology is included. (Laboratory fee.) Prereq. MLS 4322 or equiv.

MLS 4341 Epidemiology 1 (3 q.h.)

Basic concepts in epidemiology, the distribution in determinants of diseases and injuries in human populations. Descriptive and analytical epidemiology studies are included.

MLS 4342 Epidemiology 2 (3 q.h.) Microbiological distributions in determinants of infectious diseases; hospital epidemiology. May be taken independently of Epidemiology 1.

MLS 4352 Basic MLS Electronics and Instrumentation (2 q.h.)

Electricity, with coverage of introductory electronic circuits. Emphasizes medical laboratory instrumentation and related electrical processes of measurement.

MLS 4365 Quality Control (3 q.h.)
Development of quality control programs in each medical laboratory specialty. Includes applications of statistical methods to medical laboratory quality control programs.

MLS 4381 Seminar in Medical Technology (3 q.h.)

Current topics in medical technology. Includes required readings and presentations by students; guest lecturers. *Prereq. instructor's permission*.

MLS 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

MLS 4701 Advanced Tutorial 2 (3 q.h.) See MLS 4700.

*Ofered Fall 1994, 1996 †Follows MLS 4321 in Winter and Spring Quarters respectively.

MANAGEMENT SCIENCE

MS 4325 Business Decision Models (formerly Introduction to Modeling and

Simulation) (3 q.h.)

Modeling as a method for gaining insight into the underlying mathematical structure of business problems. Discusses specific modeling techniques, such as linear programming and simulation. Prereg. MTH 4111 and ECN 4251.

MS 4332 Statistical Quality Control (3 q.h.) Practical course designed to introduce the student to the basics of statistical process control (SPC) and acceptance sampling used in quality control and quality assurance of products or services. Includes control charts for attributes and variables data, process capability analysis, statistical tolerancing, and acceptance sampling concepts and sampling plans for attributes. Prereg. ECN 4251.

MS 4334 Advanced Statistical Quality Control (formerly Advanced Quality Con-

trol) (3 q.h.)

Continuation of MS 4332. Includes the use of computers in process control and acceptance sampling; special process control charts and acceptance sampling procedures; process capability and tolerance analysis; graphical problem-solving tools for quality improvement; life testing and reliability concepts.

MATH

MTH 4100 Conquering Math 1 (Noncredit) Designed for those persons with anxiety about using math, or who have had minimal exposure to it. The course includes an explanation of numbers and arithmetic operation such as addition, subtraction, multiplication, and division; numbers and their groupings: prime numbers, number systems, and parentheses; measure: English and Metric conversions; the real number line, signed numbers, and absolute values; number notation, such as fractions. All concepts are presented using arithmetic and many examples.

MTH 4101 Conquering Math 2 (Noncredit) The course is a follow-on of MTH 4100. Topics include number displays: linear and circular; the three dimensions; exponents and radicals; averages, percents; number displays: slopes and rates, sequences and series; and many well-explained word problems. All concepts are presented using arithmetic, many examples, and a few simple formulas.

MTH 4001 Introduction to Algebra 1 (formerly Introduction to Mathematics 1) (3 q.h.)

Review of elementary algebra, including operations on integers, algebraic expressions, exponents, equations, word problems, and graphing. Credit for this course cannot be applied to School of Engineering Technology degree programs.

MTH 4002 Introduction to Algebra 2 (formerly Introduction to Mathematics 2) (3 q.h.)

Further review of mathematics, including operations with polynomials, factoring, fractional expressions, and radicals. Credit for this course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4001.

MTH 4006 Technical Mathematics* (4 q.h.) Reviews high school algebra equations, formulas, exponents, polynomials, factoring, scientific notation, fractions, radicals, quadratic equations, and linear equations and their applications. Credit cannot be used in the associate in engineering, associate in science, or the bachelor of engineering technology degree programs.

MTH 4107 College Algebra* (4 q.h.) Laws of exponents, factoring, operations with fractional expressions, radical and complex numbers, Pythagorean theorem and distance formula, linear and quadratic equations and inequalities, functional notation. Graphing of a wide variety of functions and equations including lines, conic sections and polynomial. Solving many types of equations including linear, quadratic and polynomial. Many applications of algebra are also studied. Extensive use of the graphics calculator.

MTH 4108 Pre-Calculus* (4 q.h.) Exponential and logarithmic functions, trigonometric functions of angles in degrees and radians, trignometric identities and equations, right triangles, law of sines and cosines, inverse trigonometric functions, polar coordinates, complex numbers

*This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.

trignometric form, systems of linear and non-

linear equations, binomial theorem, arithmetic and geometric sequences and series. Extensive use of scientific and graphics calculator.

MTH 4110 Contemporary Algebra 1

(formerly Math 1) (3 q.h.)

Real numbers, first-degree equations and inequalities, polynomials, and rational expressions. Prereq. one year of high school algebra or its equiv. A placement test is given during the first class meeting. Students who do not attain a qualifying score on this test are advised to enroll in MTH 4001, Introduction to Mathematics, for additional preparation. This course cannot be applied to School of Engineering Technology degree programs.

MTH 4111 Contemporary Algebra 2

(formerly Math 2) (3 q.h.)

Exponents and radicals, linear equations in two variables, quadratic equations, functions and relations, conic sections, systems of equations and inequalities, sequences and series. This course cannot be applied to School of Engineering Technology Degree programs. Prereq. MTH 4110 or equiv.

MTH 4112 Contemporary Algebra 3

(formerly Math 3) (3 q.h.)

Study of complex numbers; standard form of equation for circle, ellipse, and hyperbola; and exponential and logarithmic functions. Introduction to calculus including functions and their graphs, limits, average rate of change, derivative of a function and the rules of differentiation, maxima and minima, and optimization. Prereq. MTH 4111 or equiv. This course cannot be applied to School of Engineering Technology Degree programs.

MTH 4113 Contemporary Algebra (Intensive) (formerly Mathematics Intensive) (9 q.h.)

Same as MTH 4110, MTH 4111, and MTH 4112.

MTH 4114 Contemporary Algebra 1 and 2 Combination (formerly Mathematics 1 and 2 Combination) (6 q.h.) Same as MTH 4110 and MTH 4111.

MTH 4120 Calculus 1* (4 q.h.)

Studies general function operations, theory and evaluation of limits, derivatives of algebraic and trignometric functions, general rules of differentiation, Rolle's theorem, and Mean Value theorem. Also covers application of differentiation including velocity; and acceleration, related rates, maximum, mini-

mum, curve sketching, and approximations by differentials. Examines antiderivative as an introduction to integration.

MTH 4121 Calculus 2* (4 q.h.)

Examines the Riemann sum and the development of the fundamental theorem with applications to areas, volumes, and rectilinear motion problems. Topics include the logarithmic exponential and inverse trigonometric functions and their applications; techniques of integration including parts, partial fractions, substitution, andthe use of tables; numerical integration (Simpson's and Trapezoidal rules); L'Hopital's rule; improper integrals, and sequences and series to the development of Taylor and Maclaurin series.

MTH 4122 Calculus 3* (4 q.h.)

Examines the geometry of vectors in a plane and space. Studies three-dimensional space and a treatment of functions of several variables; multiple integrals with applications in areas and volumes; and differential equations, including the solution with applications of first-order with variables separable, first-order linear, and second-order linear homogeneous to complete the sequence.

MTH 4123 Differential Equations* (4 q.h.) Linear differential equations with constant coefficients, homogeneous and non-homogeneous, are examined. Explores the variation of parameters and undetermined coefficients and simultaneous differential equations, the Laplace transform, series solution of differential equations, and the Fourier series. Orthogonal functions and numerical solutions of differential equations are studied. *Prereq. MTH 4122.**

MTH 4130 Fundamentals of Calculus 1

(3 q.h.)

Introductory course intended for students in liberal arts, business administration, and other nonengineering curricula. Includes fundamentals of differential calculus, rules of differentiation, rates of change, graph sketching, and growth and decay function. This course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4112 or equiv.

^{*}This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.

MTH 4131 Fundamentals of Calculus 2

(3 q.h.)

Applications of differential calculus, including problems in optimization, velocity and acceleration, compound interest, population growth, and the fitting of equations to data. Introduces integral calculus, areas, average values of functions, marginal cost and profit, and depreciation. This course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4130 or equiv.

MTH 4132 Fundamentals of Calculus 3

(3 q.h.)

Calculus of trigonometric functions, techniques of integration, numerical methods, and differential equations. Applications include pricing, allocation of funds, present value of an investment, manufacturing efficiency, and product reliability. This course cannot be applied to School of Engineering Technology degree programs. Prereq. MTH 4131 or equiv.

MTH 4140 Mathematics for Business

Management 1 (3 q.h.)

Mathematics topics applicable to business management, such as linear equations and inequalities, matrix algebra, linear programming, sets, and counting techniques. *Prereq. MTH 4112 or equiv.*

MTH 4141 Mathematics for Business Management 2 (3 q.h.)

Business applications of probability, decision theory, Markov chains, game theory, and competitive analysis. *Prereq. MTH 4140*.

MTH 4143 Mathematics for Business Management (Intensive) (6 q.h.) Same as MTH 4140 and MTH 4141.

MTH 4520 Statistically Thinking (3 q.h.) Introduction to statistical mode of thinking. Presents the essential logic of statistical analysis to allow the student to critically evaluate research published in professional journals as well as newspapers. The process of collecting, analyzing, and interpreting data is discussed, as well as the use of computers in statistical analysis. Lectures used in conjunction with discussions of outside readings to illustrate concepts.

MTH 4700 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

MTH 4701 Advanced Tutorial 2 (3 q.h.) See MTH 4700.

MUSIC

MUS 4100 Introduction to Music (3 q.h.) The study of music as a major creative force and component of human civilizations in all parts of the globe. This survey course emphasizes the development of listening skills as well as an appreciation of musical forms within historical and cultural contexts.

MUS 4110 Music in Popular Culture (3 q.h.) Investigation of American attitudes toward culture, art, and beauty through consideration of contemporary popular music. Compares the different styles of pop music (jazz, rock, MOR, and R&B) and traces their evolution. Examines the manipulation of public tastes by large corporations for commercial purposes.

MUS 4111 Rock Music (3 q.h.)

History of rock music from its origins in American blues and other styles through the popular music of the 1950s, the political styles of the 1960s, and the diverse trends of the 1970s. Emphasizes the formative years of rock.

MUS 4112 Jazz (3 q.h.)

Jazz, from its origins in New Orleans to the avant-garde experiments of today. Includes analysis of the rhythmic, harmonic, instrumental, and stylistic characteristics of jazz. Covers the works of such creative jazz artists as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

MUS 4120 Music Appreciation: The Masterworks of Western Civilization (formerly History of Musical Styles) (3 q.h.) Selected masterworks of the Euro-American traditions will be studied in a chronological survey. This course emphasizes the development of listening skills as well as an appreciation of musical forms within historical and cultural contexts. Composers to be studied include Bach, Handel, Mozart, Beethoven, Brahms, Wagner, Mahler, and Stravinsky.

MUS 4123 Music History of the Classical

Period (3 q.h.)

Study of changing musical styles from Stamitz and the Mannheim School through the works of Haydn, Mozart, and early Beethoven.

MUS 4124 Music History of the Romantic

Era (3 q.h.)

Musical styles of the nineteenth century, including the role of music and the musician in the changing social, economic, political, and cultural structure of Europe. Analyzes music by Beethoven, Schubert, Berlioz, Brahms, Verdi, and Wagner.

MUS 4125 Music History of the Twentieth

Century (3 q.h.)

The diversity of styles from Debussy through Stravinsky, Schoenberg, Bartok, and Hindemith and more recent developments, including musique concrete, chance music, and electronic music.

MUS 4130 The Symphony (3 q.h.)

The symphony as the major genre in the Classical, Romantic, and contemporary periods. Covers works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, and Sibelius.

MUS 4140 Life and Works of Mozart (3 q.h.) Mozart's musical development from child prodigy to mature artist, traced from his own letters and from biographies. Includes analysis of many of his major works, including operas, symphonies, concertos, and chamber music.

MUS 4141 Life and Works of J. S. Bach

(3 a.h.)

The genius who summed up the Baroque era and whose every note reflected his profoundly humanistic approach to religion. Works examined include large choral masterpieces, such as the St. Matthew Passion, the Brandenburg Concertos, the Well-Tempered Clavier, and the Suites.

MUS 4145 Life and Works of Beethoven

(3 q.h.)

The complex personality and art of this figure, including his relation to the turbulent times in which he lived and his role in Classical and Romantic music.

MUS 4163 Sound Health: Music and

Relaxation 1 (3 q.h.)

Opportunity to experience a heightened awareness of the power of music to effect

physical and emotional change, and to examine the effects of music on the body, mind, and spirit. An exploration into the awareness of sound and the physiological changes caused by music. Covers theories and techniques used to facilitate positive change, relaxation, and reduction of stress. Includes sound pollution, the effects of vibrations on the body, guided imagery, music and meditation, and New Age and environmental music.

MUS 4164 Sound Health: Music and Relaxation 2 (3 q.h.)

This course allows each student to strengthen his/her ability to work with specific techniques for using music to facilitate relaxation, stress reduction and inner healing for personal use or in a health care setting. Emphasis will be on creating healing imagery, choosing appropriate music and vocal techniques. *Prereq. MUS 4163*.

MUS 4165 The Music Industry (3 q.h.) Business-related areas of the music industry. Addresses the structure of the record industry and music publishing world, the function of performing rights organizations (ASCAP and BMI), and the role of concert and orchestral managers. Features guest lecturers from various fields and trips to "behind-thescenes" locations.

MUS 4168 Building a Career in Musical

Performance (3 q.h.)

Designed for performers representing themselves or for those interested in managing other artists. Topics include auditions, job investigation, resumes, photographs, presskits, recording, and debut recitals. Students assemble press kits, write press releases and PSAs, and learn effective ways to garner and handle publicity, to differentiate among the various audio and video formats, and assay their ideas on novel methods of promoting themselves or others.

MUS 4171 Computers and Music (3 q.h.) History of the use of computers for music composition, music and sound analysis, sound sampling and synthesis, and music scoring and printing. Emphasizes the latest technology, including the use of MIDI (Musical Instrument Digital Interface). Also features hands-on use of computers, music software, and synthesizers.

231

MUS 4172 The Recording Studio (3 q.h.) The history and methods of audio reproduction from Edison's gramophone to today's multi-track digital techniques. Includes instruction and hands-on experience at the recording facility in the College's new Media Studio. Guest lectures from experts in the field and visit to a local professional studio. (Additional fee required for studio work.)

MUS 4180 Introduction to World Music (3 q.h.)

The varied musical cultures of non-Western societies. Exploration of characteristics common to all musical systems, followed by investigation of music in the Middle East, southern and eastern Asia, Africa, South and Central America, and the Caribbean.

MUS 4200 How to Read and Write Music (3 q.h.)

Basics of musical notation for students with little or no theory or performance background. Focuses on the use of the symbols of pitch and duration. Includes sight reading simple melodies, following scores, arranging music for small instrumental groups, transposition, and elementary rhythmic and melodic composition.

MUS 4201 Music Theory 1 (4 q.h.)

Basics of music theory as a foundation for further musical study and activity. Begins with aural and visual identification of pitches, intervals, major and minor scales, and triads in the *G* and *F* clefs. Includes rhythmic and simple melodic dictation, sight-reading, elementary melodic writing, and chord construction.

MUS 4231 Musical Performance 1 (1 q.h.) Participation in rehearsals and public performances and/or research; and composition, arranging, conducting, and solo and ensemble activity with the NU Symphony Orchestra, the Early Music Players, the NU Chorus, the NU Bands, or other ensembles under the supervision of a faculty member. Evaluation of student progress at the end of the quarter by audition or other method. Prereq. audition or instructor's permission.

MUS 4232 Musical Performance 2 (1 q.h.) Continuation of MUS 4231. Prereq. MUS 4231.

MUS 4233 Musical Performance 3 (1 q.h.) Continuation of MUS 4232. Prereg. MUS 4232.

MUS 4234 Musical Performance 4 (1 q.h.) Continuation of MUS 4233. Prereq. MUS 4233. MUS 4235 Chamber Music 1 (3 q.h.)

Ten sessions, at least one-half hour each, for rehearsal, study, and performance of music for two to six players (matched according to level) under the guidance of a faculty coach. Repertoire selected from the full range of European concert music by the instructor in consultation with the students. For details, call 617-373-2416.

MUS 4236 Chamber Music 2 (3 q.h.) Continuation of MUS 4235. Prereq. MUS 4235 or instructor's permission.

MUS 4237 Chamber Music 3 (3 q.h.) Continuation of MUS 4236. Prereq. MUS 4236 or instructor's permission.

MUS 4241 Piano Class 1 (3 q.h.)

For beginning piano students who want to progress at their own pace. Grades are awarded after passing various step levels. Ownership of a piano is not required.

MUS 4242 Piano Class 2 (3 q.h.)

Introduction of scales, arpeggios, and triads to help students perform more advanced music. Repertoire consists of original compositions by the instructor and simple works by Bartok and Kabalevsky. Prereq. MUS 4241 or equiv., or instructor's permission.

MUS 4243 Piano Class 3 (3 q.h.)

Two-octave scales, arpeggios, and triads in all keys. Repertoire consists of Bartok, Kabalevsky, original compositions by the instructor, and duets specifically arranged for this course. Prereq. MUS 4242 or equiv., or instructor's permission.

MUS 4244 Voice Class (3 q.h.)

Basic vocal production required for fine singing. Repertoire, both classical and contemporary, is chosen for each student to learn and perform in lessons and outside of class. Includes lectures concerning diction, the physiology of singing, resonance, registers, interpretation, and the basics of music reading and sight-singing. Also includes class analysis of recordings of great vocal artists.

MUS 4247 Guitar Class 1 (3 q.h.)

Intended for beginners. Covers basic classical guitar techniques, including proper sitting and hand positions, note reading, and ensemble playing. Instruments, preferably nylon-strung, are required.

MUS 4248 Guitar Class 2 (3 q.h.)

Intended for those who have taken MUS 4247 or who already have a basic knowledge of classical guitar techniques and note reading. Introduces both solo and ensemble repertoire suitable to the advanced beginner. Prereq. MUS 4247 or instructor's permission.

MUS 4249 Guitar Class 3 (3 q.h.)

Continuation of MUS 4248, with repertoire suitable for early intermediate students. Prereq. MUS 4248 or instructor's permission.

MUS 4261 Music Instruction (1 q.h.)
Individual instruction in a musical instrument or in voice. Lessons may be arranged on a 45-minute basis. Call 617-373-2416 for details. Special fees. May be repeated for credit.

MUS 4270 Synthesizer Class (3 q.h.) Intended for beginners. Covers basic keyboard techniques and music-reading skills, as well as utilization of the special features of some of the more popular digital synthesizers.

MUS 4810 Honors Program 1 (4 q.h.)
Opportunity to undertake an in-depth research study project. See page 24 for details.
Prereq. 96 q.h., 3.5 q.p.a.

MUS 4811 Honors Program 2 (4 q.h.) See MUS 4810.

MUS 4812 Honors Program 3 (4 q.h.) See MUS 4810.

MUS 4815 Advanced Tutorial 1 (3 q.h.)
Dpportunity to take an upper-level course ndependently. See page 24 for details. Prereq. 37 q.h.

MUS 4816 Advanced Tutorial 2 (3 q.h.) See MUS 4815.

MUS 4820 Independent Study 1 (3 q.h.)
Deportunity to undertake special research.
See page 24 for details. Prereq. 96 q.h., 3.0 q.p.a.

MUS 4821 Independent Study 2 (3 q.h.) See MUS 4820.

MUS 4822 Independent Study 3 (3 q.h.) See MUS 4820.

NURSING

NUR 4300 Nursing Transition (9 q.h.) Introduces Registered Nurse students to the purposes, philosophy, and conceptual framework of the baccalaureate degree program. Provides opportunity to complement and validate knowledge of professional roles and role conflicts, communication and group process, and principles of teaching, learning, and evaluation. Uses the Roy Adaptation Model in designing and providing nursing care to aging, chronically ill, and dying patients. Discusses nutritional needs of aged, acute, and chronically ill individuals. Registration by petition to the Program Office. Prereq. BIO 4105, BIO 4177, BIO 4190, CHM 4132, PSY 4112, ENG 4112 and NUR 4302.

NUR 4302 Pharmacodynamics (3 q.h.) Intended for Registered Nurses. Introduces pharmacology principles, the pharmacotherapeutics of drug groups, and individual drug substances of particular importance in the treatment and diagnosis of disease. *Prereq. CHM* 4132.

NUR 4303 Life Crisis: Analysis and Response (4 q.h.)

Considers personal, family, and community crises identified from literature, health agency clientele, and student sources. Uses concepts from nursing, sociology, anthropology, and social psychology to assess critically the individual's experience of crisis and the approaches used by providers in human-service systems to help people in crisis. Gives students in consumer and/or health and human service roles the opportunity to critically examine the meaning of life crises in a social-cultural vs. psychopathological framework and to explore principles and creative strategies that might be used in responding constructively to crises in their own lives or in their experience as health or human-service workers. Open to all students.

NUR 4402 Health Assessment (4 q.h.) Provides the student with additional theory and skills relevant to the clinical decision-making role of the nurse as a primary caretaker. Extends the students' knowledge and experience of history-taking and physical and psychosocial assessment. Emphasizes analysis and synthesis of data obtained from a holistic health assessment as an essential framework for the identification of common

health abnormalities and the enhancement of the nurse's clinical decision-making skills. *Open to any Registered Nurse.*

NUR 4500 Community Health Nursing

Focuses on the nursing process to promote adaptation of individuals, families, groups, and communities. Examines utilization of the Roy Adaptation Model in addressing client needs. Analyzes the interrelationship of client and environmental factors as they relate to the attainment of health goals. Discusses the influence of the role of the community health nurse and cultural, political, socioeconomic, and epidemiological factors on client adaptation. Registration by petition to the Program Office. Open only to matriculated BSN students. *Prereq. NUR 4300, PSY 4242, and SOA 4102*.

NUR 4502 Introduction to Nursing Research (4 q.h.)

Builds on students' prior exposure to selected studies applied to nursing. Discusses and critiques qualitative and quantitative research and the value of each to the practice of nursing and to the health-care field. Examines the importance of research in nursing to both practitioner and consumer. Registration by petition to the Program Office. Prereq. NUR 4300, SOA 4102, and PSY 4242.

NUR 4504 Contemporary Issues in Nursing (2 q.h.)

Analyzes sociological, political, legal, economic, ethical historical and ideological factors affecting contemporary nursing practice and the health care system. Synthesizes professional role issues. Registration by petition to the Program Office. *Prereq. NUR 4300, SOC 4101, and PSY 4242. Please note: NUR 4504 and NUR 4505 replace NUR 4501 Contemporary Nusing.*

NUR 4505 Introduction to Leadership and Management of Nursing Care (3 q.h.)

Concepts from nursing, organizational theory, decision-making theory and leadership and management theory are explored to heighten the professional nurse's awareness of the complexity of human and material resources required for the delivery of nursing care to clients, and the importance of collaboration with a variety of providers. Registration by petition to the Program Office. Please note: NUR 4504 and NUR 4505 replace NUR 4501 Contemporary Nursing.

OPERATIONS MANAGEMENT

(formerly Industrial Management: IM)

OM 4301 Introduction to Operations Management (formerly IM 4301) (3 q.h.) Concepts and principles related to the management of operation functions, taught from a management point of view. Relationships to other business functions. Operations, as a transformation process, with inputs of materials, investment, and people producing finished goods/services. Topics covered include product and process design, forecasting demand, capacity planning, facilities design, aggregate planning, scheduling, and quality control and assurance. Prereq. MS 4325. Not open to students who have taken IM 4301 or IM 4401.

OM 4302 Operations Analysis (formerly IM 4302) (3 q.h.)

Structuring problems and the application of analytical techniques in the development of solutions to operating systems problems. Topics covered include operations planning and scheduling, analyzing operating performance, quality issues, facilities layout, materials planning, and workforce planning. Examination of the operations audit as it relates to manufacturing and service organizations developed as a tool for operations analysis. *Prereq. OM 4301 or OM 4404. Not open to students who have taken IM 4302.*

OM 4314 Productivity Enhancement and Quality (formerly IM 4314) (3 q.h.)

The fields of quality control and productivity as a body of managerial, technological, behavioral, and economic knowledge, together with the organized application of this knowledge to the practical improvement of operations. Introduction to various productivity improvement programs currently in use, including measurement and control; the relationship between increase in productivity and managing for higher quality. Reviews management practices of modern quality control and the different approaches to optimizing quality. Includes the economics of total quality, internal and external quality, and management of long-term quality and reliability. Not open to students who have taken IM 4314.

OM 4317 Purchasing and Materials Management (formerly IM 4317) (3 q.h.) Development and analysis of factors considered in the acquisition process and subsequent management of the materials function. Examines the relationships among price, quality, and delivery performance. Topics covered include the make-or-buy decision, corporate purchasing strategies, setting customer service levels, inventory analysis, facility location, storage and material handling, and selection of the transportation mode. Prereq. OM 4301 or OM 4404. Not open to students who have taken IM 4317.

OM 4321 Operations Planning and Control (formerly IM 4321) (3 q.h.)

The nature of control in general and the specific characteristics of management and operations control. Examines control structures, processes, and bases for design and implementation. Prereq. OM 4401, OM 4301 or OM 4404. Not open to students who have taken IM 4321.

OM 4326 Operations Management Policy (formerly IM 4326) (3 q.h.)

Analyses of complex operating situations faced by business managers. Students are exposed to integrative cases and are expected to identify problems in organizations, to develop viable courses of action, to conduct detailed analyses, and to identify a set of recommendations and an implementation strategy. Prereq. OM 4314, OM 4317, OM 4321. Not open to students who have taken IM 4326.

OM 4404 Service Operations Management (3 q.h.) (Reserved)

Operational issues confronting organizations competing in the service sector are discussed. Topics covered include service design, location, and layout. Other topics addressed are the capacity decision, aggregate planning, technology, scheduling, inventory issues, and the pursuit of quality (excellence). *Prereq. ECN 4251 and 80 q.h.*

OM 4600 Honors Program 1 (formerly IM 4600) (4 q.h.)

Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

OM 4601 Honors Program 2 (formerly IM 4601) (4 q.h.) See OM 4600. OM 4602 Honors Program 3 IM 4602) (4 q.h.) See OM 4600.

OM 4701 Independent Stud IM 4701) (3 q.h.) Opportunity to undertake sp See page 24 for details. Prereq

OM 4702 Independent Stud IM 4702) (3 q.h.) See OM 4701.

OM 4703 Independent Stud IM 4703) (3 q.h.) See OM 4701.

OM 4800 Advanced Tutorial IM 4800) (3 q.h.)
Opportunity to take upper-le dependently. See page 24 for 687 q.h.

OM 4801 Advanced Tutorial IM 4801) (3 q.h.) See OM 4800.

PHYSICAL EDUC

PED 4200 Cardiovascular Hea. Exercise (3 q.h.)

Structured exercise program m times per week and offering a cho ing, jogging, swimming, or aero classes and a weekly cardiovasc lecture. Participants receive two c sive cardiovascular medical and p ness evaluations, prior to and at t tion of the program. Includes a car nary examination by a cardiolog chemistry profile, pulmonary funing, resting EKG, graded exercise (stress) test with EKG and blood evaluation; along with an assessmen cent body fat (ideal weight and p weight loss where applicable). Each pant receives a computerized repo vidual exercise programs are based results.

PHILOSOPHY

PHL 4100 Philosophical Thinking (3 Methods and values of thinking philosocally. Reveals strategies of dialogue an informational discovery through unc

I use of the Socratic method of xchange. Analyzes the univertruth in order to distinguish ring and not knowing, dogma, . Proves value issues through thics and moral philosophy.

ical Thinking (3 q.h.) ill provide the student with ills: the organization and deirgument, analysis of content, precise articulation of ideas. tical thinking texts will be texts from a variety of sources, newspaper articles to materig in the student's own field.

ilosophy of Knowing and

e between knowledge and bef theoretical focus include the mate reality, the nature of hudge, and the nature and exist-The investigation of a variety of lalternative solutions helps stuidependently and self-critically. the development of discipline n in communicating ideas.

nilosophy of Right and Justice

ocial and political philosophy. In resses the questions "What sorts re good or bad?" and "What acght or wrong?" In social and poosophy, examines theories of hue, social change, social institutions, twentieth-century political theoble additional topics include aes-I philosophy of history.

Moral Problems in Medicine

d moral problems created by mediice. Questions investigated include a human life be prolonged under dition and at any cost?" "What are ral problems caused by the current I definitions of death?" and "Is it y right to predetermine the physical teristics of future generations by gengineering?"

1170 The Human Search for Meaning

unation of selected philosophical probof human existence, such as freedom, th, sexuality, alienation, and becoming a son.

PHL 4180 Business Ethics (3 q.h.)

Ethical principles and considerations involved in making moral business decisions. Studies basic ethical viewpoints as a foundation; analyzes specific characteristics of business life through particular cases and examples.

PHL 4200 Logic (3 q.h.)

Essentials of lucid thinking in terms of basic logical concepts, including deductive and inductive reasoning, valid and invalid arguments, and the varied functions of language and definition. Also examines how to recognize and evaluate different kinds of arguments, methods of detecting and avoiding common errors in reasoning, and the link between structured thought and effective communication.

PHL 4220 The Meaning of Death (3 q.h.) Various philosophical and religious views concerning the meaning of death. Discusses such questions as "What attitude should one take regarding one's own death?" "What role does death play in our personal relations to others?" and "Is it necessary to believe in an afterlife in order to give meaning to this life?"

PHL 4223 New Age Philosophy (formerly Philosophy of Consciousness) (3 q.h.) Theories of consciousness, the possibility of higher states of consciousness, and some techniques, such as meditation, alleged to lead to higher states of consciousness. Readings may include psychological and parapsychological literature on the subject.

PHL 4233 Special Topics in Philosophy

Examination of a variety of subjects and themes, such as ancient philosophy, philosophy of science and technology, and ethical issues in race and gender. Because topics change from quarter to quarter, students may take this course more than once, provided they focus on a different topic each time.

PHL 4235 Personal Ethics (3 q.h.)

As we live our lives, we face many decisions about the "rightness" or "wrongness" of our ideas and actions. Explores two different approaches to moral dilemmas: utilitarian theory, which defines the good as the best possible outcome, and deontological theory, which states that actions themselves are either good or evil. Applies these ethical theories to the moral choices we make on issues such as abortion, the AIDS epidemic, capital punishment, nuclear arms, and taxation.

PHL 4243 Existentialism (3 q.h.)

Existential philosophy as understood through study of its greatest representatives, such as Kierkegaard, Nietzsche, Dostoyevsky, Heidegger, Jaspers, Camus, Sartre, and Merleau-Ponty. Focuses on the central themes of self-alienation, authenticity, and existential experiences.

PHL 4245 Philosophy of Religion (3 q.h.) The arguments for the existence of God. Covers natural and moral evil, the soul, immortality, the evidence for miracles, and the nature of religious knowledge.

PHL 4247 Theistic, Atheistic, and Agnostic Philosophies (3 q.h.)

Selected theistic, atheistic, and agnostic philosophies. Questions studied include: "Is the belief in God necessary for a comprehensive philosophy of life?" "How does an atheistic philosophy explain and justify the 'higher values' such as love, beauty, and justice?" and "How is it possible to base a philosophy on the principle of agnosticism?'

PHL 4249 Woman's Spirituality (formerly

Feminist Spirituality) (3 q.h.) Women's religious experience as described in classical and contemporary sources. Readings include such works as Womanspirit Rising, The Politics of Women's Spirituality, and Dreaming the Dark.

PHL 4250 Philosophy of Human Nature (3 q.h.)

Philosophical and literary study of human nature. Questions include "What is human nature?" and "What is a human being?" Examines some of the philosophical answers to these questions, with special attention to the significance of tradition, social role, freedom, and decision.

PHL 4251 Images of Women in Philosophy (3 q.h.)

Philosophical approach to the study of women in society. Drawing from sources within the history of philosophy and literature, includes the role (ideal and actual) of women in society, love and marriage, oppression and isolation, and the cult of virginity.

PHL 4252 Women's Ethical Issues (3 q.h.) The emerging feminist ethos as distinct from traditional descriptions of feminist morals and values. Discusses questions of politics, power, values, and actions. Readings include such works as De Beauvoir's The Ethics of Ambiguity and Daly's Gyn-Ecology.

PHL 4255 Women and Religion (3 q.h.) The role and place of women in the major religions of the world and contemporary feminist challenges to these traditional understandings. Readings include such works as Carmody's Women and Religion and Daly's Beyond God the Father.

PHL 4256 Introduction to Feminist Thought

Introduction to feminist scholarship in various fields. Explores what constitutes knowledge when women's experiences, rather than men's, frame the questions, provide the data, and interpret that data.

PHL 4265 Contemporary Religious Issues in America (formerly Understanding Religion in America Today) (3 q.h.) Study America's remarkable religious pluralism. Includes contemporary Christianity and Judaism, nontraditional Christian and non-Christian movements, cults, sects, and quasi-religious organizations. After becoming familiar with American religious foundations, students study the connections between religion and sociotechnological change, sex, biomedical ethics, politics, and the media. May include guest speakers.

PHL 4266 The Religious Right in Contemporary America (3 q.h.)

Evangelism, fundamentalism, extremist groups, and nontraditional Jewish and Christian movements. Also examines "priesthood of all believers," grace and the idea of the "elect," and the state of being "born again" as well as the New Deal, the Great Society, and the "conservative revolution." Includes background on the roots of these movements, from precolonial Europe and Puritan America to the development of the Social Gospel. May include guest speakers.

PHL 4267 Cults and Sects (3 q.h.) Examines the varieties of religious experience from the perspectives of sociology and psychology of religion. Focuses on such cultic and sectarian groups as Christian Science, the American Shakers, the Unification

Church, the Hare Krishna movement, and the Black Muslims. Provides the student the opportunity to acquire critical investigative tools with which to analyze different religious expressions.

PHL 4270 The Great Western Religions

Study of the basic teachings of Judaism, Christianity, and Islam.

PHL 4273 Judaism (3 q.h.)

Philosophy of the Jewish religion, its metaphysical and ethical beliefs, and the philosophical origins of these beliefs.

PHL 4275 The Great Eastern Religions (3 q.h.)

Study of the basic teachings of Taoism, Confucianism, Buddhism, Hinduism, and Shintoism.

PHL 4277 Hinduism (3 q.h.)

The Hinduism of the *Upanishads*, the most explicit of the mystical religions. Also includes the devotional aspect of Hinduism as expressed in the Bhagavad Gita.

PHL 4279 Buddhism (3 q.h.)

Central teachings of Buddhism, including the doctrines that there is no independently existing immutable self or soul, that all phenomena are impermanent, that existence is suffering, that suffering has a cause, and that there is a way to eliminate suffering.

PHL 4280 Islam (3 q.h.)

History of Islam, its conflicts with the West in the past and in the present, Islamic beliefs, and the future of Islam as a world religion.

PHL 4293 Mysticism: East and West (3 q.h.) Inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics and of secondary interpretive sources. Explores the potential oneness of humanity with God, the conflict of mysticism with traditional forms of religion, and the possibility of a common, cross-cultural basis for mysticism.

PHL 4317 Understanding the Bible (3 q.h.) This course introduces students to the Old and New Testaments so that they may enter into a dialogue with the Bible, understanding not only what it says, but why it is said that way. Discussion focuses on the bible's social, political, and cultural backgrounds.

PHL 4330 Myths, Dreams, and Mysteries (formerly The Encounter of Psychology and

Religion) (3 q.h.)

Exploration of the ways the sense of self shapes and is shaped by religion. Emphasis on dominant Western psychologies and religions. Examination of the role of religious values in defining cultural values, and of these values in determining a sense of self.

PHYSICS

PHY 4101 College Physics 1* (4 q.h.) Introduction to mechanics, including units of measurement, vectors, accelerated motion, and Newton's laws of motion. Further topics include conservation of energy, work, momentum and introduction to elements of heat, mechanical waves and vibrating bodies. Laboratory experiments and classroom demonstrations are an integral component of this course. (This course cannot be utilized for credit towards technology degrees in the School of Engineering Technology.) *Prereq.* MTH 4107.

PHY 4102 College Physics 2* (4 q.h.) Introduction to magnetism, magnetic fields, electromagnetic induction, electrostatics and electric circuits. Further areas covered include appropriate topics in optics, nuclear and atomic physics. Laboratory experiments and classroom demonstrations are an integral component of this course. (This course cannot be utilized for credit towards technology degrees in the School of Engineering Technology.) Prereq. PHY 4101.

PHY 4117 Physics 1* (4 q.h.) Introduces vectors and balanced forces, accelerated motion, projectile motion, Newton's laws, work and energy, momentum, and equilibrium of rigid bodies, and moment of inertia. Prereq. MTH 4107 or concurrently.

PHY 4118 Physics 2* (4 q.h.)

Explores rotational motion, periodic motion, electric forces and fields, electric potential, capacitance, electromotive force, and direct current circuits. Prereg. PHY 4117.

^{*}This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College.

PHY 4119 Physics 3* (4 q.h.)

Covers magnetic fields and forces, electromagnetic induction, inductance, Gauss's law, electromagnetic waves, mechanical waves, sound, and the interference and diffraction of light. *Prereq. PHY 4118*.

PHY 4196 Physics Laboratory 1* (1 q.h.) First in a three-quarter sequence for SET students. Lab course that accompanies PHY 4117 and in which students perform experiments selected from physics topics covered concurrently in PHY 4117. Prereq. PHY 4117 concurrently.

PHY 4197 Physics Laboratory 2* (1 q.h.) Second in a three-quarter sequence for SET students. Lab course that accompanies PHY 4118 and in which students perform experiments selected from physics topics covered concurrently in PHY 4117 and PHY 4118. Prereq. PHY 4118 concurrently; PHY 4196.

PHY 4198 Physics Laboratory 3* (1 q.h.) Third in a three-quarter sequence for SET students. Lab course that accompanies PHY 4119 and in which students perform experiments selected from physics topics covered concurrently in PHY 4118 and PHY 4119. Prereq. PHY 4119 concurrently; PHY 4197.

POLITICAL SCIENCE

POL 4103 Introduction to Politics (3 q.h.) Introduction to contemporary political science, including consideration of basic concepts in political analysis, the role of government institutions, political representation, political ideologies, and the scope and methods of political science.

POL 4104 Introduction to American Government (3 q.h.)

American governmental and political processes, constitutional institutions, political behavior, and liberties.

POL 4105 Introduction to Comparative Politics (3 q.h.)

Comparative study of constitutional and totalitarian systems, including the Western European and Soviet patterns.

POL 4106 Introduction to Politics (4 q.h.) Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and a constitutional system. For Alternative Freshman-Year students only.

POL 4110 The Great Political Thinkers (3 q.h.)

Explores the great political thinkers from ancient Greece to the twentieth century. Probes the creative genius of such theorists as Plato, Aristotle, Aquinas, Hobbes, Hegel, Locke, Rousseau, Mill, and Marx.

POL 4112 Political Elites in Modern
Democracies (formerly Political Elites in
Advanced Industrial Societies) (3 q.h.)
This course focuses on theories of political
elites in advanced industrial societies. The
question of who rules is central. What role
do elites play in modern democracies? Are
there in fact elites? The theories of Mosca,
Pareto, Michels, and the modern debate represented by thinkers such as Mills and Dahl
are central to the course. The course also
presents the Marxist, pluralist, and corporatist paradigms for understanding politics with

POL 4300 Introduction to Public Administration (formerly Public Administration 1) (3 q.h.)

respect to the issue of elites.

Introduction to the theory, forms, and processes of administration at the national and state levels.

POL 4301 Case Studies in Public Administration (formerly Public Adminis-

tration 2) (3 q.h.)

Case-study examination of the relationship between the theory and practice of public administration. *Prereq. POL 4300 or equiv.*

POL 4302 Public Administration (Intensive) (6 q.h.)

Same as POL 4300 and POL 4301.

POL 4303 Public Personnel Administration (3 q.h.)

Study basic elements of personnel administration, including recruitment, training, classification, promotion, and executive development. Pays special attention to current problems, such as equal opportunity, public employee unionism, and collective bargaining.

*This is a School of Engineering Technology course, which is offered at a different tuition rate than that of University College. POL 4304 Public Budgeting (3 q.h.)

Politics, procedures, and goals of government budgeting at the federal, state, and local levels are covered. Includes expense, capital, and program budgeting.

POL 4305 Organizational Theory (3 q.h.) Examines people and organizations, focusing on organizational and societal problems as a way of understanding how we can survive in a bureaucratic system.

POL 4306 Public Policy Analysis (3 q.h.) Procedures for the analysis of public policy are studied, including discussion of selected cases of public policy at the local, state, or federal level.

POL 4307 Politics of Health in International Development (formerly The Politics of

Health) (3 q.h.)

Explores the problems of health in developing countries, particularly during the last decade. Examines the political dynamics at the village, national, and global levels that have hindered efforts to establish health care delivery systems. Analyzes issues of nationalism and problems of refugees.

POL 4309 Business and Government

(3 q.h.)

Explores the interaction between business and government, and the constraints within which each must operate in our society. Issues to be raised include the structure and function of the corporation, understood as a political entity; the "revolving door" between business and government; the impact of corporations on democratic processes and institutions; and the degree to which political rights and economic rights are intertwined.

POL 4310 American Political Thought

(3 q.h.)

Topics include political thought from the Colonial period to the present, including study of the impact of religious, economic, and judicial theories on the structure of American ideas.

POL 4311 Research Methods (3 q.h.)

Introduction to some of the most common methods of conducting political science research. Includes problems of theory construction and data-gathering and such analytical research tools as bibliographical aids and the computer.

POL 4312 Political Parties and Pressure

Groups (3 q.h.)

Discusses party government in the United States focusing on the interaction of party and government.

POL 4313 State and Local Government (formerly Government and Politics and the States) (3 q.h.)

State and local governments, their problems, and functional and operational responses to these problems are examined.

POL 4314 Urban and Metropolitan

Government (3 q.h.)

Explores political, structural, and functional problems of an urbanizing United States. Includes an analysis of urban, suburban, and metropolitan governments.

POL 4316 Ecology in Political Perspective

(3 q.h.)

Human beings have become major actors for ecological change. Not only are we a part of nature, we use and reshape nature. This course is structured to explore the impact of human beings on nature, and to prognosticate what will happen if present trends continue. A core interest in the course will be to examine the efforts of interested citizens and organizations to use political means to control and direct these trends.

POL 4318 The American Presidency (3 q.h.) Study of the nation's chief executive. Includes topics such as the presidential electoral process, the president's many constituencies, and the differing styles of twentieth-century presidents. Also covers constitutional and extraconstitutional powers of the office.

POL 4319 The Congress (3 q.h.) Institutional and functional analysis of the roles of Congress are examined, as well as the chief executive, and political parties in the legislative process.

POL 4320 American Constitutional Law

(3 q.h.)

A case analysis of the development of Federalism, the separation of powers, and the role of the federal and state courts in constitutional development.

POL 4321 Civil Liberties (formerly Civil

Rights) (3 q.h.)

Examination of quality and content of civil liberties in the United States. Emphasizes the First, Fifth, Sixth, Fourteenth, and Fifteenth amendments to the Constitution.

POL 4322 Criminal and Civil Due Process (formerly Procedural Due Process) (3 q.h.) Study of due process in the American constitutional scheme.

POL 4324 Politics and Documentary Film (3 q.h.)

Designed to complement POL 4325, Politics and Film, this course will focus on the documentary in an attempt to analyze the political themes and ideas different film-makers bring to their subject. Implications for contemporary American society will be highlighted. Films to be viewed include Chris Marker's Sans Soleil, Peter Davis' Hearts and Minds, Frederick Wiseman's Missile, Michael Moore's Roger and Me, and Barbara Koppel's The American Dream.

POL 4325 Politics and Film (formerly The

Politics of Films) (3 q.h.)

The relationship between films and politics is explored. Films are analyzed for their political content and impact on specific controversies and on politics and society as a whole. (Laboratory fee.)

POL 4326 The Sixties (3 q.h.)

A political, philosophical, sociological and cultural analysis of the Sixties is presented. The major issues of that era are discussed: civil rights, the Vietnam War, the student movement. Special attention is given to the arts, including music and film.

POL 4327 Women in American Politics (formerly Sex Roles in American Politics)

(3 q.h.)

Topics such as the roles of women in American government and politics, including the traditional roles—or absence thereof—of women in American politics, the suffrage movement, the impact of sex on achieving political power and office, the growing importance of the women's vote, the women's movement, and political action to support women's issues are covered.

POL 4328 Mass Media and American

Politics (3 q.h.)

The study of the role of the media in shaping political opinions and behaviors. The role of the media in setting political agendas and reporting and interpreting political events will be examined. The nature and influence of public opinion in a democratic society will also be studied.

POL 4329 Psychology of Politics (3 q.h.) How do psychological processes affect politics? How are people's political beliefs and attitudes shaped? What needs, intrinsic or otherwise, do people bring into the political process? What is "human nature," and what impact does it have on society? Is a non-repressive society possible? These are some of the issues to be discussed in this course, which will attempt to integrate politics and psychology into a comprehensive analytical framework.

POL 4330 Comparative Politics (3 q.h.)
Discusses political culture, organization, and behavior in different national settings.

POL 4331 International Relations (3 q.h.) Studies elements of and limitations on national power. Discusses contemporary world politics, problems of war, and peaceful coexistence.

POL 4332 International Organization

(3 q.h.)

The development of international organizations, emphasizing the United Nations, specialized agencies, and regional organizations, is explored.

POL 4333 International Law (3 q.h.) Examines the procedural and substantive study of the legal relations among nation-states.

POL 4335 Formulating American Foreign

Policy (3 q.h.)

The Constitution and political instruments for the formulation of American foreign policy are discussed.

POL 4336 American Foreign Policy (3 q.h.) Study of recent and current American foreign affairs.

POL 4337 The Politics of Arms Control

(3 q.h.)

Discusses the nuclear arms rivalry between the United States and the Soviet Union, along with opportunities for curtailing it through arms control. Includes the nature and purposes of nuclear weapons, past arms-control agreements, and recent breakthroughs. Explores current options for arms control.

POL 4338 European Political Parties

(3 q.h.)

Emphasizes political party systems in England, France, and Germany, and their ideol-

ogy, organization in and out of Parliament, electoral strategies, and voter behavior.

POL 4339 Government and Politics of Russia (3 q.h.)

Surveys the government and politics of the Soviet Union as it was and of Russia today. Covers the history of the Soviet regime, government, economy, party, ideology, political culture, Gorbachev and his reforms, the breakup into various republics, and the problems facing Russia today.

POL 4341 Russian Foreign Policy (3 q.h.) Surveys Russian and Soviet foreign policy from 1917 to the present with special focus on the postwar period and the foreign policy reforms and problems faced by the new regime. Emphasis is given to Russia's relations with the West including Western economies.

POL 4342 Eastern Europe in Transition (formerly Communism in Eastern Europe)

Surveys the new states of Eastern Europe with a focus on economic and political reforms. Topics include the governments and institutions of the new regimes, the problems in instituting the market into their economies, and efforts to establish links with Western Europe and international economic organizations such as the IMF. Surveys the old regimes as single-party dictatorships, the tensions that existed with their Soviet connections, and the forces that led to their braking away from Moscow.

POL 4350 Politics and Policies of the Developing Nations (3 q.h.)

Covers colonialism, the struggles for independence, and the common problems of developing nations. Includes economic development, urbanization, cultural fragmentation, and revolution.

POL 4352 Government and Politics of Latin America (3 q.h.)

Explores the historical background of the Latin American nations and their cultural, economic, social, and political characteristics, including political violence and the breakdown of democratic governments.

POL 4356 Government and Politics of Northern Africa (3 q.h.)

A comparative analysis of political culture, organization, and behavior of African states north of the Sahara, with emphasis on Morocco, Algeria, Tunisia, and Egypt.

POL 4357 Government and Politics of South Africa (3 q.h.)

An analysis of political culture, organization, and behavior of South Africa. Examines the South African history to show how South Africa got where it is today, including the nature, implications, and problems of apartheid, and prospects for the future.

POL 4359 Government and Politics in the Middle East (3 q.h.)

Political change, economic growth, and social adaptation in selected countries is discussed. The emergence of the Middle East from subjection to self-assertion is examined, focusing on such topics as the influence of Western Modernism, Muslim fundamentalism, inter-Arab rivalries, Arab-Israeli conflict, and the civil strife in Lebanon.

POL 4362 Government and Politics of Southeast Asia (3 q.h.)

Explores political instability and problems of establishing democratic structures and processes in the Philippines, Thailand, and India.

POL 4364 China's Foreign Policy (3 q.h.) Examines Bejing's relations with Africa, the rest of Asia, the Soviet orbit, and the West. Covers policy objectives, strategy, tactics, and the methods of decision-making in both the party and state apparatus.

POL 4365 Government and Politics of China (3 q.h.)

Discusses Chinese political culture, emphasizing the nineteenth-century cultural, economic, and political impact of the West, the emergence of the Communist party under the leadership of Mao Tse-Tung, and the progressive disintegration of Kuomintang leadership.

POL 4367 Government and Politics of Japan (3 q.h.)

Examines the historical development of the Japanese nation, with particular attention to the growth of fascism and efforts to create a viable democracy since World War II.

POL 4370 Introduction to Political Theory (3 q.h.)

Discusses the development of the political ideas of the Western world, including the ideas of the major philosophers of Greece, Rome, the Christian Era, and the Renaissance.

POL 4371 Modern Political Theory (3 q.h.) Explores political ideas and systems of thought from Machiavelli to the present. Prereq. POL 4370 or equiv.

POL 4372 Contemporary Political Thought (3 q.h.)

Analyzes current ideas, ideologies, and political movements. Examination of such topics as neo-conservatism, neoliberalism, neo-Marxism, and women's liberation.

POL 4373 Islamic Political Thought (3 q.h.) Introduces Islamic thought and political theory. Analyzes such classical theorists as Avicenna, Averroes, Al-Ghazali, and Ibn Khaldun, and such modern theorists as Abduh, Iqbal, and Shari'ath.

POL 4375 Consumer Advocacy 1 (3 q.h.) A pragmatic course, designed to define and expand the role of consumers in the market-place. Focuses on contemporary consumer issues, touching upon the legal, social, economic, and political aspects of consumer problems and the role of consumer lobbies as special interest groups. More specific consumer problems, such as those of the elderly, may also be explored.

POL 4376 Consumer Advocacy 2 (3 q.h.) Continuation of POL 4375. Prereq. POL 4375 or equiv.

POL 4377 Consumer Advocacy 3 (3 q.h.) Continuation of POL 4376. Prereq. POL 4376 or equiv.

POL 4378 Current Political Issues (3 q.h.) Explores the constitutional and political basis of selected problems in American political life.

POL 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

POL 4816 Advanced Tutorial 2 (3 q.h.) See POL 4815.

POL 4820 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

POL 4821 Independent Study 2 (3 q.h.) See POL 4820.

POL 4822 Independent Study 3 (3 q.h.) See POL 4820.

POL 4830 Honors Program 1 (4 q.h.)
Opportunity to undertake an in-depth research study project. See page 24 for details.
Prereq. 96 q.h., 3.5 q.p.a.

POL 4831 Honors Program 2 (4 q.h.) See POL 4830.

POL 4832 Honors Program 3 (4 q.h.) See POL 4830.

POL 5375 Consumer Advocacy 1 (3 CEUs) Same as POL 4375.

PSYCHOLOGY

PSY 4110 Introduction to Psychology: Fundamental Issues (formerly Fundamental Issues in Psychology) (3 q.h.) Explores fundamental principles and issues of contemporary scientific psychology, which are approached as a method of inquiry as well as a body of knowledge. Examines the origins and methods of psychology, biological foundations of behavior, states of consciousness, learning, and memory.

PSY 4111 Introduction to Psychology: Developmental Aspects (formerly Developmental Aspects in Psychology) (3 q.h.) Covers growth and the life-cycle, language, mental abilities, sensory and perceptual processes, and social interaction. *Prereq. PSY* 4110 or equiv.

PSY 4112 Introduction to Psychology: Personal Dynamics (formerly Personal Dynamics in Psychology) (3 q.h.) Examines motivation, emotion, personality theory and measurement, abnormal psychology, and therapy. *Prereq. PSY 4110 or equiv.*

PSY 4113 Introduction to Psychology Intensive A (formerly Psychology Intensive) (9 q.h.) Same as PSY 4110, PSY 4111, and PSY 4112.

PSY 4114 Introduction to Psychology Intensive B (6 q.h.) Same as PSY 4110 and PSY 4111.

PSY 4115 Introduction to Psychology Intensive C (6 q.h.) Same as PSY 4111 and PSY 4112. Prereq. PSY 4110 or equiv.

PSY 4220 Statistics in Psychology 1 (3 q.h.) Scales of measurement in psychological research, measures of central tendency, and

variability are discussed. Prereq. PSY 4111 and PSY 4112 or equiv.

PSY 4221 Statistics in Psychology 2 (3 q.h.) Introduces measures of correlation, probability, and statistical distributions. Prereq. PSY 4220 or equiv.

PSY 4222 Statistics in Psychology 3 (3 q.h.) Explores parametric and nonparametric tests of significance, including chi square, t-test, F test, and simple analysis of variance. *Prereq. PSY 4221*.

PSY 4231 Psychology of Learning (3 q.h.) Studies the basic principles and techniques of operant and Pavlovian conditioning and their applications to therapeutic, educational, and specialized training programs. *Prereq. PSY 4111 or PSY 4112 or equiv.*

PSY 4232 Motivation (3 q.h.)

Topics include various aspects of motivation, including primary and secondary reinforcement, unconscious motivation, effectuate motivation, and the assessment of motives. *Prereq. PSY 4112 or equiv.*

PSY 4240 Development: Infancy and Childhood (formerly Developmental Psychology: Infancy and Childhood) (3 q.h.) Explores human development from infancy through late childhood. Covers physical, cognitive, and psychosocial development, including the development of language, morality, and interpersonal relationships.

PSY 4241 Development: Adolescence (formerly Developmental Psychology: Adolescence) (3 q.h.)

Examines development during the second decade of life, emphasizing the tasks and problems confronting the individual adolescent. Includes topics such as biological, social, and cognitive changes as they relate to the creation of a stable, individual identity.

PSY 4242 Development: Adulthood and Aging (formerly Developmental Psychology: Adulthood and Old Age) (3 q.h.) Discusses the unique features and problems of development from the adult years to death. Emphasizes changes that accompany career, marriage, and family developments and the specific psychological adjustments required of the aging person.

PSY 4243 Aging and Mental Health (3 q.h.) Covers emotional reactions to age-related issues, such as retirement, bereavement, and health status. Discusses depression and suicide, behavior disorders, substance use problems, and the dementias of old age and the effects these problems have on families and the community. Includes a survey of special assessment techniques, mental health services for the elderly, and public health policies for improved care.

PSY 4262 Memory and Thinking (formerly Cognitive Psychology) (3 q.h.) Explores the mental processes involved in the acquisition, organization, and use of knowledge, including pattern recognition and memory. Prereq. PSY 4111, PSY 4112, or equiv.

PSY 4263 Psycholinguistics (3 q.h.) Covers topics such as the nature and structure of language, various theories of human production and perception of language, and related experimental findings. *Prereq. PSY* 4111 or equiv.

PSY 4270 Social Psychology 1 (3 q.h.) Studies the socialization process, social motives, interpersonal perception, and group membership and structure. *Prereq. PSY 4111 or equiv.*

PSY 4271 Social Psychology 2 (3 q.h.) Examines topics of attitudes, prejudice and ethnic relations, leadership, mass behavior and social movements, and the effects of mass media on communication. *Prereq. PSY* 4270 or equiv.

PSY 4272 Personality (3 q.h.) Studies the normal personality and its growth and development. Includes concepts such as environmental and genetic contributions, assessment of personality, research, and a survey of the major personality theories. Prereq. PSY 4112 or equiv.

PSY 4275 Group Processes (3 q.h.)
Analyzes group structure and its effect on behavior. Topics include leadership, communication, conflict resolution, and group problem-solving. Student participation used to illustrate and develop group-related concepts.

PSY 4276 Stress and Its Management (3 q.h.)
Covers stress and its effects on human be-

Covers stress and its effects on human behavior. Considers the causes of stress from a variety of theoretical perspectives. Techniques and procedures for stress management and reduction examined in detail.

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PSY 4280 Human Sexuality and Love

(3 q.h.)

An examination, both theoretical and experimental, of psychological, biological, and social aspects of sexuality and loving. Topics include sexual anatomy and physiology; birth control; gender identity and gender role; romantic love (with emphasis on successful love relationships); diverse sexual lifestyles; sexual dysfunctions and therapy; and enhancement of one's own sexual awareness and pleasure and that of one's partner.

PSY 4290 Psychology of Women (3 q.h.) Examines women, historically and in contemporary life, including their social roles and their behavior as determined genetically, physiologically, and psychologically. Includes discussion on the implications for women's future lifestyles, roles, and contributions. Prereq. PSY 4111 or PSY 4112 or equiv.

PSY 4351 Physiological Psychology (3 q.h.) Introduces how nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce behavior; and how such psychological concepts as perception, learning, motivation, arousal, and emotion may relate to nervous system activity. Prereq. PSY 4111 or PSY 4112 or equiv.

PSY 4352 Drugs and Behavior (3 q.h.) Considers the application of quantitative behavior techniques in animals and humans to determine the behavioral effects of pharmacological agents. Includes systematic survey of experimental literature. Prereq. PSY 4111 or PSY 4112 or equiv.

PSY 4370 Impact of Psychology on Society

(3 q.h.)

Includes developments such as the uses of intelligence and aptitude tests, psychosurgery and electroconvulsive therapy, techniques of behavior modification and control, minority and women's rights movements, direct brain stimulation by implanted electrodes, use of psychoactive drugs, use of the lie detector, and the application of experimental techniques to human beings. *Prereq. PSY 4111 or equiv.*

PSY 4372 Abnormal Psychology 1 (3 q.h.) Introduces the etiology and dynamics of the abnormal personality. *Prereq. PSY 4112 or equiv.*

PSY 4373 Abnormal Psychology 2 (3 q.h.) Examines symptomatology and treatment of the neuroses and psychoses. *Prereq.* 4372 or equiv.

PSY 4374 Abnormal Psychology 3 (3 q.h.) Explores psychosomatic, psychopathic, and organic disorders; varieties of psychotherapy. Prereq. PSY 4373 or equiv.

PSY 4381 Sensation and Perception (3 q.h.) Introduces thenature of the perceptual world, the nature of object recognition and identification, spatial organization, contextual effects, learning and perception, and the influence of attitudinal, motivational, and personality factors on perception. Prereq. PSY 4111 or equiv.

PSY 4390 Industrial Psychology 1 (3 q.h.) Examines psychology as applied to industry, including such topics as selection and placement procedures, employee assessment, individual differences and their evaluation, and the place of psychological tests in industry. Prereq. PSY 4111 or PSY 4112 or equiv.

PSY 4391 Industrial Psychology 2 (3 q.h.) Covers personnel training and development, motivation and work, attitudes and job satisfaction, engineering psychology, and human factors in accident causation. Prereq. PSY 4390 or equiv.

PSY 4392 Industrial Psychology 3 (3 q.h.) Discusses supervision and leadership, morale, personnel counseling, the psychology of labor-management relations, human relations, and organizational behavior. *Prereq. PSY 4391*.

PSY 4471 Psychological Therapies (3 q.h.) Studies techniques used for treating deviant behavior, from classical psychoanalytical therapies through methods of behavior modification. Prereq. PSY 4374 or equiv.

PSY 4561 Experimental Psychology 1 (3 a.h.)

Students conduct experiments focusing on the scientific method in the design, execution, analysis, and reporting of psychological investigations. *Prereq. PSY* 4222.

PSY 4562 Experimental Psychology 2 (3 q.h.)

Continuation of PSY 4561. Prereq. PSY 4561.

PSY 4563 Experimental Psychology 3 (3 q.h.)

Continuation of PSY 4562. Prereq. PSY 4562.

PSY 4611 Senior Seminar in Psychology (3 q.h.)

Small groups of students meet to discuss topics of mutual interest in psychology. Each seminar has a different focus, depending upon the student group and the instructor. *Prereq. PSY 4561 and PSY 4562.*

PSY 4813 Field Work in Psychology (6 q.h.) Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the work place. See page 23 for details.

PSY 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

PSY 4816 Advanced Tutorial 2 (3 q.h.) See PSY 4815.

PSY 4820 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

PSY 4821 Independent Study 2 (3 q.h.) See PSY 4820.

PSY 4822 Independent Study 3 (3 q.h.) See PSY 4820.

PSY 4891 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. Prereq. 96 q.h., 3.5 q.p.a.

PSY 4892 Honors Program 2 (4 q.h.) See PSY 4891.

PSY 4893 Honors Program 3 (4 q.h.) See PSY 4891.

PURCHASING

PUR 4351 Purchasing 1 (3 q.h.) Introduction to the function of purchasing in the industrial organization. Includes purchasing responsibilities, objectives, organization, and personnel requirements; purchasing policy and systems; the role of the computer in regulating purchasing planning, transactions, and information retrieval; ac-

quisition of purchased materials, development of sources of supply, and quality assurance; and determination and maintenance of required inventory levels. Also covers control of inventory investment, price determination, cost and price analysis of purchase transactions, make or buy decisions, and the role of standardization and value analysis.

PUR 4352 Purchasing 2 (3 q.h.)
The process of purchase negotiations, budgets, and purchase of capital equipment is examined. Includes purchasing for public and nonprofit institutions, disposition of surplus and obsolete materials, traffic and material handling, forward buying and speculation, ethical considerations in purchasing, purchasing law, contract cancellations, purchasing reports, evaluation of purchasing performance, and control and audit procedures. *Prereq. PUR 4351*.

PUR 4353 Purchasing (Intensive) (6 q.h.) Same as PUR 4351 and PUR 4352.

PUR 4357 Business Negotiations (3 q.h.) Explores buyer-seller communication and exchange. Includes the interactive process for arriving at a satisfactory agreement between buyer and prospective vendor and accepted strategies employed by both parties. Discusses economic and technical considerations and the psychological and interpersonal environments of negotiations.

PUR 4358 Materials Requirements Planning (MRP) (3 q.h.)

Includes determination of material requirements based on the master production schedule; as well as calculation of the time periods in which materials must be available. The computer-based MRP system may be used as preparation for APICS certification exams.

PUR 4365 Production Activity Control (3 q.h.)

Topics include principles, approaches, and techniques used to plan, schedule, control, and evaluate the effectiveness of factory production operations. Examines scheduling and control techniques used in various manufacturing environments. Course may be used as preparation for APICS Certification examinations.

PUR 4370 Inventory Management (3 q.h.) Explores basic inventory management objectives, from the control of raw materials to

finished goods and distribution inventory management. Includes aggregate inventory controls, lot sizing, customer service objectives, and the financial and physical controls necessary for effective inventory management. Course may be used as preparation for APICS Certification examinations.

PUR 4390 Just-In-Time Manufacturing (JIT) (3 q.h.)

Just-In-Time manufacturing is a natural evolution of traditional practices which strives towards increasing through-puts, decreasing inventory investments, decreasing operating expenses, improving quality, etc. This course has been developed to introduce the student to the philosophies, principles, concepts, and techniques of Just-In-Time purchasing and manufacturing. Emphasis on the differences between traditional and J.I.T. manufaturing will be discussed in detail. This course will also help the student to prepare for the APICS Just-In-Time certification examination.

PUR 4393 World Class Manufacturing (3 q.h.)

Focuses on how industries are changing manufacturing operations to become world class competitors by using innovative, effective manufacturing techniques. Discusses implementing improvements immediately on the shop floor, measuring results, improving quality, eliminating waste, responding rapidly to customer demands, reducing inventories and manufacturing costs.

PUR 4395 Master Production Scheduling

(MPS) (3 q.h.)

This course is divided into two sections: Forecasting and Master Production Scheduling. The Forecasting Section develops the concept of Forecasting; qualitative, intrinsic and extrinsic techniques, Forecast source data, Forecast accuracy, statistics, the relation of Forecasting to other processes and Management Considerations. The Master Production Scheduling Section develops the concepts of Master Scheduling Planning and Control, development and utilization of a Master Production Scheduler. Finally, the course discusses the link between Forecasting, the Master Production Schedule and Customer Orders. This course can be used for preparation for the APICS certification examination.

PUR 4396 Systems and Technologies (3 q.h.)

Systems and Technologies is the newest APICS module which focuses on the relationships between the functions of production and inventory control and manufacturing. The purpose of the course is to help the student understand the integrated needs of both existing and emerging technologies, and the synergy necessary to provide positive results in the production and inventory environment. This course helps the student recognize business, marketing, and manufacturing strategies that drive the choice and configuration of production and inventory functions, tools, and methods. This course can be used for preparation for the APICS certification examination.

PUR 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. Prereq. 96 q.h., 3.5 q.p.a.

PUR 4601 Honors Program 2 (4 q.h.) See PUR 4600.

PUR 4602 Honors Program 3 (4 q.h.) See PUR 4600.

PUR 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. Prereq. 96 q.h., 3.0 q.p.a.

PUR 4702 Independent Study 2 (3 q.h.) See PUR 4701.

PUR 4703 Independent Study 3 (3 q.h.) See PUR 4701.

PUR 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

PUR 4801 Advanced Tutorial 2 (3 q.h.) See PUR 4800.

RADIOLOGIC TECHNOLOGY

RAD courses are only open to admitted students.

RAD 4100 Radiologic Technology Orientation 1 (3 q.h.)

Examines history of X-radiation, radiology department organization, medical terminology, patient care and nursing procedures, and contrast media.

RAD 4101 Radiologic Technology Orientation 2 (3 q.h.)

Study of medical and surgical diseases. Prereq. RAD 4100.

RAD 4102 Radiologic Science 1 (4 q.h.) Basic concepts of physics, units of measurement, Newton's law of motion, work, energy, atomic theory of matter, electric currents, magnetism, generators, motor production, control of high voltage, and X-ray production are covered. *Prereq. MTH 4110*.

RAD 4103 Radiologic Science 2 (4 q.h.) Topics include interaction of X-rays and matter; modern X-ray tubes; X-ray circuits; fluroscopic systems; and properties of solids, liquids and gasses. Also covers temperature, heat transfer and their application. *Prereq. RAD 4102*.

RAD 4104 Principles of Radiology 1 (4 q.h.)

Practical, basic radiation protection and the principles of positioning patients for radiographic studies are covered. *Prereq. RAD* 4100.

RAD 4105 Principles of Radiology 2 (4 q.h.)

Explores principles of precise body positioning for detailed radiographic studies. *Prereq. RAD 4104*.

RAD 4106 Radiologic Photography and

Exposure 1 (4 q.h.)

Examines basic principles of image formation, electromagnetic spectrum, X-ray tube construction, factors controlling radiographic quality and patient exposure.

RAD 4107 Radiologic Photography and Exposure 2 (4 q.h.)

Examines mathematical formulas used in radiography. Includes in-depth study of sensitometry, phototiming principles, radiographic film techniques and electronic image capture and recording. *Prereq. RAD 4103 and RAD 4106*.

RAD 4116 Radiology Practicum 1 (4 q.h.) Students apply theoretical principles by performing radiographic procedures under supervision in a direct patient care setting. Requires four hours of classroom education and assigned homework. Emphasizes patient safety, radiation protection, and basic, routine diagnostic procedures. *Prereq. RAD* 4104 and RAD 4106.

RAD 4117 Radiology Practicum 2 (4 q.h.) Continuation of RAD 4116. Emphasizes routine diagnostic procedures, including fluoroscopy, operating room and portable radiography. Prereq. RAD 4116 and RAD 4105.

RAD 4118 Radiology Practicum 3 (4 q.h.) Continuation of RAD 4117. Emphasizes advanced diagnostic procedures, including invasive and interventional studies. Minor rotations are scheduled for related imaging departments. *Prereq. RAD 4117 and RAD 4107*.

RAD 4119 Radiology Practicum 4 (4 q.h.) Continuation of RAD 4118. Final clinical practicum leads to demonstration of accomplishment of terminal clinical competencies. *Prereg. RAD 4118.*

RAD 4121 Radiographic Lab 1 (1 q.h.) Energized x-ray laboratory activities designed to complement RAD 4106.

RAD 4122 Radiographic Lab 2 (1 q.h.) Continuation of RAD 4121. Designed to complement RAD 4107.

RAD 4130 Ultrasound Physics and Instrumentation (3 q.h.)

Introduces the physics of ultrasonographic imaging. Topics include the nature of ultrasound, propagation of ultrasound through tissues, and the construction and generation of ultrasound transovers. Discussions of ultrasonographic instruments include doppler, pulse echo devices, and image storage/display media. Covers quality assurance, bioeffects and safety concerns of untrasonographic imaging. *Prereq. MTH* 4111.

RAD 4131 Abdominal Ultrasonography 1

(3 q.h.)

Introduces the fundamentals of ultrasonographic imaging of major organs of the adult abdomen. Discusses patient preparation, exam protocol and follow-up patient care. Emphasizes basic scanning techniques along with image recognition of the gastrointestinal, biliary and urinary tracts.

RAD 4132 Echocardiography 1 (3 q.h.) Introduces the fundamentals of ultrasonographic imaging of the adult cardiovascular system. Discusses cardiac anatomy and physiology, ultrasonographic equipment and operation, scanning positions, M-mode, two-

dimensional and doppler echocardiography. Prereq. RAD 4304 and RAD 4130.

RAD 4133 Obstetrics and Gynecological Ultrasound 1 (3 q.h.)

Introduces the fundamentals of ultrasonographic imaging of structures in the adult female pelvis. Discusses normal pelvic anatomy and physiology, patient exam

preparation, equipment operation, scanning protocols and image recognition. Prereq. RAD 4304 and RAD 4130.

RAD 4134 Pediatric Echocardiography (3 q.h.)

Introduces the fundamentals of echocardiographic imaging on pediatric patients. Discusses normal anatomy, normal hemodynamics, congenital and acquired pathologies, instrumentation and scanning techniques. Stresses the understanding of ancillary recording modalities and functional assessments. Preeq. RAD 4304 and RAD 4130.

RAD 4141 Abdominal Ultrasonography 2

Introduces students to advanced principles of ultrasonographic imaging of the adult abdomen. Emphasis on the evaluation of the abdomen for specific diseases. Discusses linkage between medical laboratory test results and ultrasound exam protocols. Recognition of common pathologies of major abdominal structures will be accented. Prereg. RAD 4131.

RAD 4142 Echocardiography 2 (3 q.h.) advanced principles of Introduces ultrasonographic imaging of the adult cardiopulmonary system. Emphasis on developing an understanding of specific exam protocols that will demonstrate precise cardiopulmonary structures. Discusses new state-of-the-art imaging modalities. Prereq. RAD 4132.

RAD 4143 Obstetrics and Gynecological Ultrasound 2 (3 q.h.)

Introduces advanced principles of ultrasonographic imaging of the female pelvis. Emphasis on demonstrating selected obstetrical and gynecological diseases and neoplasms ultrasonography. Stresses patient preparation, exam protocol and recognition of normal varients. Prereq. RAD 4133.

RAD 4170 Magnetic Resonance Imaging 1 (3 q.h.)

A comprehensive overview of the physics of magnetic resonance imaging. Stresses basic imaging concepts and various techniques associated with MRI exams. Discusses patient screening and necessary safety guidelines required to work in an M.R.I. department. Prereq. RAD 4304. Must be a registered (A.R.R.T.) radiologic technologist.

RAD 4304 Cross-Sectional Anatomy (4 q.h.)

Introduces regional approach to anatomy. Reviews standard anatomy, with emphasis on relations of organs and structures to transverse and longitudinal section appearance.

RAD 4305 Advanced Radiologic Technology (4 q.h.)

Special procedures including cardiovascular procedures, neuroradiology, lymphangiography, and intervention studies are explored. Exam methodology, required equipment, special patient care, contrast media, and contra-indications are also covered. Prereg. RAD 4103, RAD 4105, RAD 4107.

RAD 4306 Radiation Protection— Radiobiology (4 q.h.)

Topics include atomic structure, properties of radioactive materials, units of radiation, long and short-term biological effects, lifespan shortening, radiation in detection and survey instruments, radiographic facilities design, quality assurance principles, resolution of radiation to patients, federal X-Ray standards. Prereq. RAD 4107.

RAD 4400 Anatomy of the Head and Neck (3 q.h.)

Explores anatomy of the head and neck in regional approach. Both standard and sectional anatomy are presented. Topics include brain, orbits, nasal cavity and paranasal sinuses, oral cavity and pharynx, larynx, thyroid and salivary glands, and angiology of head and neck.

RAD 4450 Computerized Body Tomography Pathology (3 q.h.)

Studies abnormal anatomy of the neck, thorax, abdomen, and pelvis as demonstrated by computed tomography. Appropriate correlations made to normal anatomic structure. Prereq. RAD 4304 or consent of instructor.

RAD 4460 Medical Imaging Quality

Assurance (3 q.h.)

Establishing, conducting, and interpreting the results of a medical imaging quality assurance program are discussed. Covers basic imaging chain, film characteristics and sensitometry, test equipment and operation, data collection and interpretation. *Prereq. RAD* 4305 or equiv.

REAL ESTATE

RE 4301 Real Estate Fundamentals 1 (3 q.h.) Introduction to the basic principles and terminology of real estate useful in various real estate business practices.

RE 4302 Real Estate Fundamentals 2 (3 q.h.) Examines practices of real estate brokerage, including real estate appraisal, finance, development, management, and investment. Upon successful completion of RE 4301 and RE 4302, students may take the Massachusetts broker's or salesperson's examination. *Prereq. RE 4301*.

RE 4303 Real Estate Fundamentals (Intensive) (6 q.h.) Same as RE 4301 and RE 4302.

RE 4304 Real Estate Fundamentals (Brokers) (4 q.h.)

Reviews the general principles and practices of real estate fundamentals. General principles are examined with specific attention given to those areas of real estate that are tested on the Massachusetts broker's real estate examination. On successfully completing RE 4304, students are certified, which enables them to take the Massachusetts broker's exam. Prereq. RE 4302 or permission of instructor.

RE 4305 Real Estate Title Examination (3 q.h.)

Review of the general principles of abstracting and the function of the Registry of Deeds in the real estate business. General principles of title examinations are explored in detail, with attention given to recording deeds and the transfer of title in the conveyance of real estate. The function of the land court and registered land is also treated. Prepares the students for a possible career in title examination and may require field work in the form of activities to be performed at the Registry of Deeds.

RE 4323 Real Estate Appraisal 1 (3 q.h.) Fundamental survey of the appraisal of single-family residences. Examines city or town neighborhood influences, site evaluation, building diagnosis, depreciation, the various approaches to value, and appraisal report preparation. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. *Prereq. RE 4302*.

RE 4324 Real Estate Appraisal 2 (3 q.h.) Specialized overview of the appraisal of income properties. Includes application of the cost, market, and income approaches to apartment buildings and other commercial and industrial properties and of the various methods of capitalization and residual techniques. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. *Prereq. RE 4323*.

RE 4326 Appraising a Single-Family

Dwelling (3 q.h.)

Fundamental survey of the appraisal of single-family dwellings for the beginning appraiser, real estate broker, salesperson, lender, assessor, or builder. Includes city and neighborhood analysis, site evaluation, building materials and cost, and depreciation. Also includes selected research into appropriate market data, assembling pertinent information, applying relevant analytical techniques, and preparing appraisal reports, including FNMA/FMAC report forms. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement.

RE 4327 Real Estate and Computer Analysis

(3 q.h.)

This practical, step-by-step approach to the use of computers in the real estate business is strongly recommended for those students who plan to take Real Estate Appraisal 2 and is required for those students taking either Real Estate Financial Analysis 1 or Financial Analysis 2. The course involves a detailed analysis of computers in the financing of income properties. Students will be required to purchase a hand-held state-of-the-art computer with a solution workbook, the combined cost of which will be less than \$100. The computer will allow the students to ex-

amine and analyze proposed real estate investments and complicated appraisal assignments. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. *Prereq. RE 4302 or permission of instructor.*

RE 4328 Real Estate Financial Analysis 1 (3 q.h.)

Analysis of how to critically examine and analyze any proposed real estate investment. Explores in detail the financial aspects of acquisition, ownership, and disposition, and considers taxation of investments, forms of property ownership (organization of the venture), analysis of operating statements, financial accounting, use of leverage, "taxsheltered" investments, and special situations. Develops criteria of risk and return on investment (ROI) that should be established by various types of investors. Spreadsheets utilized. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. Prereq. RE 4324 or instructor's permission.

RE 4329 Real Estate Financial Analysis 2 (3 q.h.)

Detailed analysis of the risks and rewards of real estate investments and problems involved in financing income properties, using case studies, homework problems, and class discussion and debate. Stresses class participation. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. *Prereg. RE 4328*.

RE 4330 Real Estate Financial Analysis (Intensive) (6 q.h.)

Same as RE 4328 and RE 4329. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. *Prereq. RE 4324.*

RE 4340 Real Estate Development (3 q.h.) Practical, step-by-step approach to the organization and development of a real estate project for the entrepreneur, banker, or broker. Includes the role of the developer, acquisition of land, site analysis, construction finance, gap financing and permanent com-

mitments, project budgeting for capital costs and for income and expense, selection of professionals, negotiations of agreements with contractors and owners, and marketing the completed project. Case studies and guest lecturers may be featured. The classroom hours in this course are recognized by the Massachusetts Board of Real Estate Appraisal Registration for the purposes of the new licensing and certification requirement. Prereq. RE 4329 or instructor's permission.

RE 4341 Real Estate Law 1 (3 q.h.)

Covers private real estate law, including ownership rights in land, leasehold rights, and easements in the land of another; legal forms of ownership; the transfer and acquisition of title and of other interests; recording of deeds, leases, and other instruments; and the land-lord-tenant relationship.

RE 4342 Real Estate Law 2 (3 q.h.)

Includes topics such as public real estate law, including government powers, rights, and controls on privately owned real estate; zoning and subdivision controls; conservation controls; taxation of real estate; rent controls; and eminent domain. *Prereq. RE 4341*.

RE 4344 Real Estate Management 1 (3 q.h.) Prepares students for the practical problems of real estate management. Stresses the requisite day-to-day management of commercial, industrial, and residential properties as well as the need for a management strategy relating to long-term property values. Prereq. RE 4302 or instructor's permission.

RE 4345 Real Estate Management 2 (3 q.h.) Continuation of RE 4344. Prereq. RE 4344.

RE 4346 Real Estate Management 3 (3 q.h.) Continuation of RE 4345. Prereq. RE 4345.

RE 4350 Buying Repossessed Real Estate (3 q.h.)

Introduction to the procedures and guidelines for dealing with government and institutionally foreclosed and repossessed property, emphasizing the hazards and opportunities of the process. Focuses on research techniques for finding, evaluating and financing published and unpublished repossessed commercial and residential for-sale property.

RE 4600 Honors Program 1 (4 q.h.)
Opportunity to undertake an in-depth research study project. See page 24 for details.

Prereq. 96 q.h., 3.5 q.p.a.

RE 4601 Honors Program 2 (4 q.h.) See RE 4600.

RE 4602 Honors Program 3 (4 q.h.) See RE 4600.

RE 4701 Independent Study 1 (3 q.h.)
Opportunity to undertake special research.
See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

RE 4702 Independent Study 2 (3 q.h.) See RE 4701.

RE 4703 Independent Study 3 (3 q.h.) See RE 4701.

RE 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

RE 4801 Advanced Tutorial 2 (3 q.h.) See RE 4800.

THERAPEUTIC RECREATION

REC 4101 Principles and Practices of Therapeutic Recreation 1 (3 q.h.) Overview of the field, including rationale, history, philosophy, goals, treatment settings, problems of institutionalization, adjunctive therapies, and professional development.

REC 4102 Principles and Practices of Therapeutic Recreation 2 (3 q.h.)
Basic medical terminology with an overview of traumatic, sensory, neurological, orthopedic, and cardiovascular disabilities. Also includes prosthetics, orthontics, and an examination of attitudinal and societal barriers for the handicapped.

REC 4103 Principles and Practices of Therapeutic Recreation 3 (3 q.h.) Integrated case-method and systems approach to planning with individuals and groups. Focus is on assessment; quality assurance; designing, charting, and understanding the fundamental elements of activities; current legislation; and standards of service.

REC 4104 Therapeutic Recreation Examination Review (3 q.h.) Explores/reviews the basic theoretical and program aspects of Therapeutic Recreation Services. A major focus of this course is to update/upgrade practicing professionals with current trends in the profession to prepare them for the competency exam.

REC 4105 First Aid Procedures (formerly Childhood Medical Procedures) (2 q.h.) Explores emergency care/first aid and medical procedures for infants, children and adolescents who are in the care of professional parents in group homes, foster homes and day care facilities based on the practices of the American Red Cross and Standard of Care by Pediatricians. Prevention will be a major focus.

REC 4110 Group Dynamics and Leadership 1 (3 q.h.)

Emphasis on self-awareness, identity, and interpersonal and intergroup communications. Includes process factors influencing the need to join the group; motivation to participate; membership screening; size and purpose of the group; open-ended and closed approaches; group problem-solving; brainstorming; and conflict resolution.

REC 4111 Group Dynamics and Leadership 2 (3 q.h.)

Discussion of organization, development, and structure of groups; team building; role and value clarification; ramifications of change; group characteristics; and leadership styles and techniques. *Prereq. REC 4110.*

REC 4112 Group Dynamics and Leadership (Intensive) (6 q.h.)
Same as REC 4110 and REC 4111.

REC 4118 Coping Skills for Child Rearing (2 q.h.)

A basic introduction to understanding coping skills for those in a parenting role. A primary focus of this course is to introduce cognitive, behavioral, emotional and environmental changes. Lifestyle changes as well as various relaxation techniques will be presented.

REC 4210 Psychosocial Aspects of Illness and Disabilities (3 q.h.)

Exploration of relevant issues related to disability such as societal understanding of disability, handicapping conditions, adjustment, social networks, and the therapeutic use of self, through a mixture of lectures, group discussion, guest speakers, and films. Examination of self in the role of change agents and care providers.

REC 4215 Causes/Detection of Child Abuse

(2 q.h.)

Introduction to the causes of abuse in individuals and in society. Detailed description/definitions of domestic violence, child abuse, neglect and sexual abuse. Assessing treatment services and intervention strategies are introduced.

REC 4300 Arts and Crafts 1 (3 q.h.)

Overview of the creative media available for individual projects. Includes how to develop the technical capability to use a wide variety of materials in imaginative ways and the compilation of a personal arts and crafts manual as a reference tool. (Laboratory fee.)

REC 4301 Arts and Crafts 2 (3 q.h.)

Adaptation of creative skills to a therapeutic setting. Emphasizes continued development of technical capabilities and of instructional skills (one-to-one and group). Also discusses the planning, implementation, and integration of craft programs. (Laboratory fee.)

REC 4302 Arts and Crafts (Intensive) (6 q.h.) Same as REC 4300 and REC 4301. (Laboratory fee.)

REC 4310 Social Recreation (3 q.h.)

Planning, organizing, and motivating for social and physical activities, including ice breakers, mixers, active motor and inactive games, joint projects, and special events geared to a variety of settings.

REC 4311 Therapeutic Use of Music 1

Introduction to the field of music therapy, including an exploration of historical and current theories and various techniques used in clinical settings. Also includes a survey of the literature of therapy, covering special education and psychiatric and geriatric areas. Not open to students who have taken MUS 4160 or MUS 4161.

REC 4314 Therapeutic Use of Music 2 (formerly MUS 4161) (3 q.h.)

This course continues the exploration of the principles and practices of the therapeutic uses of music. It allows the student to use theoretic knowledge to create music therapy activities for a variety of client populations with an emphasis on psychiatric and geriatric care. *Prereq. REC 4311*.

REC 4350 Legal Issues of Disability and Rehabilitation (3 q.h.)

An analysis of significant legal issues pertaining to rehabilitation and disability in education, employment, and housing. Pertinent federal and state statutes covered.

REC 4378 Professional Caregiving 1 (formerly Parenting Skills 1) (3 q.h.)

Designed for both experienced and prospective parents/caregivers. It will reinforce and enhance methods that parents/caregivers have already developed to deal effectively with the care of children, adolescence and young adults. For those who feel less confident about their ability or experience, it will point the way to an effective, consistent, philosophical approach.

REC 4379 Professional Caregiving 2 (formerly Parenting Skills 2) (3 q.h.)

Designed to help parents/caregivers understand and differentiate between psychotic and neurotic behaviors, as well as to identify the symptoms of the unattached child. Specific techniques will be taught that will help the caregiver work successfully with the child, and in the case of the severely disturbed child, adolescent and adult, to be able to work as part of a therapeutic team in a treatment plan.

REC 4380 Professional Caregiving (Intensive) (formerly Parenting Skills Intensive) (6 q.h.)
Same as REC 4378 and REC 4379.

REC 4401 The Nursing Home Experience (3 q.h.)

This course explores the nursing home experience as well as additional long term/extended care facilities and their services and programs for the elderly. Therapeutic and activity based programs will be a focus as well as additional alternative living arrangements and services.

REC 4402 Leisure and Lifestyle (3 q.h.) Focuses on aspects contributing to lifestyles and the role of leisure. Examines specific lifestyles through reading and video-taped materials. Gives students the opportunity to examine the impact of leisure on their own lifestyles and future aspirations.

REC 4403 Concepts of Leisure: Sociopsychological Perspectives (3 q.h.) Explores the various sociopsychological perspectives of leisure and the relations of mo-

res, social structure, roles and values, and personality to leisure expression. Investigates other pertinent social and environmental factors that contribute to the phenomena of leisure.

REC 4425 Mental Illness and Retardation

(3 q.h.)

Origins and manifestations of mental illness and retardation are discussed. Historical and contemporary overviews include discussions of treatment, settings, case studies, and trends.

REC 4460 The Process of Aging (3 q.h.) Psychosocial dynamics of growing old, physical changes as a result of aging, the needs of people as they age, and attitudes toward work, retirement, and leisure are discussed. A study of dependency versus independence, remotivation, death and dying, and programs and services that add quality to a long life.

REC 4462 Leisure Counseling (3 q.h.) Remedial and developmental process designed to produce behavior and attitude changes in the client's leisure patterns. Includes development of competence in identifying, using, and referring appropriate recreational resources. Compares leisure counseling fundamentals in a variety of recreational settings.

REC 4500 Clinical Internship 1 (4 q.h.) Assigned field experience in a treatment facility under supervision of a certified professional. Students have the opportunity to learn about the direct service application of classroom theory through observation and participation and written reports, evaluations, and seminars. Prereq. REC 4103 plus 12 q.h. of professional courses and consultant's permis-

REC 4501 Clinical Internship 2 (4 q.h.) Continuation of REC 4500. Prereg. REC 4500.

REC 4502 Clinical Internship (Intensive)

(8 q.h.)

Assigned clinical internship in a facility under the supervision of a certified Therapeutic Recreator (CTRS) professional. This clinical experience averages 36-40 hours per week for a minimum of 10 consecutive weeks at one agency totalling a minimum of 360 hours. This course meets the certifying requirement of the National Park and Recreation Association Certifying Board for the Therapeutic Recreator. Prereq. REC 4103 plus 12 q.h. of professional courses and/or the consultant's permission.

SPEECH - LANGUAGE PATHOLOGY AND **AUDIOLOGY**

SLA 4101 Introduction to Speech and Hearing (3 q.h.)

Offers an overview of disorders of speech and hearing and their treatment, and a review of normal speech and hearing development. Requires clinical observations of persons with speech, language, and hearing disorders.

SLA 4200 Speech and Hearing Science

Presents concepts and information related to the physics of sound and principles of psychophysics and audition. Introduces the anatomical and physiological basis of speech sound production and the acoustic analysis of speech. Examines current theories and research in speech reception, perception, and production.

SLA 4201 Anatomy and Physiology of Vocal Mechanisms (3 q.h.)

Offers an in-depth study of the static structure, musculature, and physiology of the speech mechanism. Emphasizes current research in speech physiology. Prereq. SLA 4101.

SLA 4300 Language Acquisition (3 q.h.) Analyzes the emerging semantic and syntactical aspects of language in normal and atypical children. Discusses current theory and research in language acquisition. Requires clinical observations of children with normal and atypical language patterns.

SLA 4301 Phoentics and Developmental

Phonology (3 q.h.) Offers basic training in auditory recognition and symbolization of phonemes and allophones in major American dialects. Stresses static and dynamic articulatory descriptions. Also includes a review of the developmental sequences of phonemic. Prereq. SLA 4101 and SLA 4201.

SLA 4303 Introduction to Audiology (3 q.h.) Focuses on the basic techniques of audiometric testing and hearing conservation, including a review of basic hearing sciences and a prepracticum and laboratory experience in hearing testing.

SLA 4403 Clinical Process in Speech and

Language (3 q.h.)

Reviews principles and procedures of the functional analysis of behavior. Focuses on applying behavioral theory and research to speech, language, and hearing training. Emphasizes clinical investigation in the experimental analysis of behavior, and offers experience applying experimental procedures in assessing and treating people with communication disorders.

SLA 4460 Neurological Bases of Communication (3 q.h.)

Provides an opportunity to acquire an understanding of neuroanatomy and neurophysiology as they relate to normal aspects of speech, hearing, and language.

SOCIOLOGY-ANTHROPOLOGY

SOA 4100 Physical Anthropology (3 q.h.) Introduction to elements of physical anthropology, covering such subjects as primates, fossil humans and evolution, problems of heredity and genetics, race and racial classifications. Not open to students who have credit for SOC 4010.

SOA 4101 Cultural Anthropology: Kinship Societies (formerly Preliterate Societies)

(3 q.h.)

Introduction to sociocultural anthropology through the study of societies that have been called "tribal" or "primitive." Examines a range of contemporary societies that have no class structures, their social and cultural institutions, their subsistence strategies, and their efforts to remain independent people today.

SOA 4102 Cultural Anthropology: State Societies (formerly Industrial Societies)

(3 q.h.)

Examines the social relations and cultural dynamics in peasant societies. Discusses the transformation of peasants into workers and the patterns of industrialization in the post-colonial world. Addresses issues of cultural diversity and social stratification in industrial societies.

SOA 4103 Anthropology Intensive A (6 q.h.) Same as SOA 4100 and SOA 4101.

SOA 4104 Anthropology Intensive B (formerly Anthropology Intensive) (9 q.h.) Same as SOA 4100, SOA 4101, and SOA 4102.

SOA 4105 Anthropology Intensive C (6 q.h.) Same as SOA 4101 and SOA 4102.

SOA 4110 Human Nature: Myths and Realities (3 q.h.)

This course examines debates about whether or not violence, competition, male dominance, and power strugglers are inborn in people, or to what extent they can be documented as social and cultural creations. Cross-cultural data and data from ape and prehuman societies will be used to address the question. *Prereq. SOA 4100 or SOA 4101 or SOA 4102*.

SOA 4146 Peasant Societies in a Changing World (3 q.h.)

Examines changes affecting traditional peasant cultures in the non-Western and Western worlds. Includes the processes occurring in situations involving culture contact, conquest, and colonialism.

SOA 4155 Individual and Culture (3 q.h.) Focuses on cross-cultural comparisons of the socialization and acculturation of children and adults with respect to roles, values, and personality. Examines theories and methods used in psychological anthropology.

SOA 4160 Sex, Sex Roles, and the Family (3 q.h.)

Analyzes popular and scientific notions about sex and the family by examining the social patterning of interactions in our culture, other cultures, and other species. Emphasizes the changing relationships between men and women.

SOA 4221 Culture and Medicine (3 q.h.) Perspectives on medicine and health care are rapidly changing. As costs skyrocket, alternatives to "curative" medicine are being sought. Uses an anthropological perspective and draws on the vast amount of cross-cultural literature in exploring the impact of sociocultural factors on the incidence, definition, treatment, and prevention of illness as well as the organization of health services.

SOA 4266 Folklore (3 q.h.)

Focuses on Folklore, art, and song in various societies and how they are studied. Examines contemporary American materials.

SOA 4322 Culture Theory (3 q.h.)

What is culture? How do we explain cultural phenomena, including culture change? This course examines different classical and contemporary theories of culture: Boasian, functionalist, structuralist, marxist, post-structuralist, and postmodernist.

SOA 4430 Native North American Peoples

(3 q.h.)

Past and present circumstances of a number of native North American peoples are explored.

SOA 4431 African Peoples and Cultures

(3 q.h.)

Topics include African geography, prehistory, and culture; the spectrum of societal complexity ranging from Mbuti egalitarianism to Ashanti federation; and the problems of political, economic, and social change in contemporary Africa.

SOA 4434 Latin American Peoples and

Cultures (3 q.h.)

Explores the processes of socioeconomic and cultural change in Latin America. Examines a selection of precolonial, colonial, and contemporary societies. For contemporary societies, the focus is on the relationship of local communities (peasant, worker, ethnic) to national cultures and global political and economic structures.

SOA 4470 Religion in Cross-Cultural Perspective (3 q.h.)

Comparative analysis of the rituals, beliefs, and religious institutions of various groups.

SOCIOLOGY

SOC 4010 Principles of Sociology 1 (4 q.h.) Introduction to basic concepts and theories relating to the study of people as participants in group life. Emphasizes socialization, culture, social structure, primary groups, family, social stratification, and population. For Alternative Freshman-Year students only. Not open to students who have credit for SOC 4100 or SOC 4101.

SOC 4011 Principles of Sociology 2 (4 q.h.) Continuation of SOC 4010. Emphasizes critical analysis of American society with particular attention to problems of social, political, urban, and industrial change. For Alternative Freshman-Year students only. Not open to students who have credit for SOC 4101 or SOC 4102. Prereq. SOC 4010 equiv.

SOC4100 Roles, Culture, and the Individual (formerly Fundamental Issues in Sociology)

(3 q.h.)

Examines basic theoretical perspectives, research methods, and concepts of sociology, including society, status and role, socialization, and social groups. Not open to students who have credit for SOC 4010.

SOC 4101 Inequality and Institutions (formerly The Individual and Social Roles)

(3 q.h.)

Examines how an individual's experience in society is shaped by cultural institutions and beliefs, and structures of interaction. Topics include patterns of deviance (crime, drugs), gender roles, and sexuality. Not open to students who have credit for SOC 4010 or SOC 4011. Prereq. SOC 4100 or equiv.

SOC 4102 Institutions and Social Change (formerly Critical Issues Facing Society)

(3 q.h.)

Examines important social factors, including business and industry, population and ecology, science and technology, class, and race and ethnic relations. Not open to students who have credit for SOC 4011. Prereg. SOC 4100 or equiv.

SOC 4103 Introduction to Sociology Intensive A (formerly Sociology Intensive) (9 q.h.)

Same as SOC 4100, SOC 4101, and SOC 4102.

SOC 4104 Introduction to Sociology Intensive B (6 q.h.) Same as SOC 4100 and SOC 4101.

SOC 4120 Sociology of Boston (3 q.h.) The city is a laboratory for exploring the people's search for a lifestyle and the satisfaction of their needs. The city of Boston from the perspectives of environmental development, neighborhood and intergroup relations, institutional services, and symbolic meanings. Includes field trips with workbook and requires use of documentary and literary sources for term paper report. Does not meet elective requirements for Sociology-Anthropology major.

SOC 4125 Social Problems (3 q.h.) Contemporary American social problems and the application of sociological concepts, methods, and principles to these problems are explored.

SOC 4147 Urban Life (formerly Urban

Sociology) (3 q.h.)

Topics include various causes, characteristics, and effects of urbanization in several different cultures. Gives specific attention to the problem of urban and suburban living and the changing structure of the city.

SOC 4154 Sex and Gender Roles in Society (formerly Sex in Society: The Study of Sex Roles) (3 q.h.)

Explores historical and contemporary developments, examining the ways in which men's and women's changing roles are related to society at large.

SOC 4155 Family Relations (formerly Sociology of the Family) (3 q.h.)

Studies the family as a social institution in several selected cultures; family interrelations with political, economic, and educational institutions; and the changing nature of the family.

SOC 4156 Violence in the Family

(formerly Sociology of the Family 2) (3 q.h.) Examines physical, emotional, and sexual violence that occurs in families, emphasizing child and spouse abuse. Analyzes definitions, prevalence, causes, prevention, and treatment of specific cases of violence. Primary focus is on social and policy issues and problems of legal intervention.

SOC 4170 Race and Ethnic Relations (3 q.h.) Focuses on relationships among various racial, national, cultural, and religious groups, emphasizing the development of black-white relationships in American society. Also covers the problems of contemporary minority peoples in American and other societies.

SOC 4175 Work and Professions (formerly

Sociology of Work) (3 q.h.) Explores the world of work, focusing on the development of occupational cultures, the nature of careers, and the meanings and implications of professionalization. Students are encouraged to do a project on a career they are considering or one in which they have had practical experience.

SOC 4177 Gender in the Workplace (3 q.h.) This course is designed to present an interdisciplinary exploration of issues related to gender differences and equality in the workplace. It is structured into three sections—theory, history, and policy—to provide real world and diverse perspectives on the sub-

ject. Topics to be discussed include women's voice, gender psychology, gender and historical analysis, race and gender, education and professionalism, comparable worth, the men's movement, the glass ceiling, leadership and management styles, among others.

SOC 4178 Cultural Diversity in the Workplace (3 q.h.)

A study of multiculturalism and diversity at work by focusing on issues such as changing workforce composition, international competition, sexism, racism, ageism, and nationalism.

SOC 4185 Deviant Behavior (formerly Sociology of Deviant Behavior) (3 q.h.) Topics include a variety of social problems and their relation to the organization of society. Pays particular attention to alcoholism, sexual offenses, drug abuse, mental disorders, and other responses to conditions of urban industrial society.

SOC 4186 Social Control (3 q.h.)
Discusses group membership as a determinant of behavior, including analysis of status and role, patterns of authority, power, and

group ideology as factors in the evaluation of conduct.

SOC 4190 Juvenile Delinquency (3 q.h.) Emphasis on factors involved in juvenile delinquency and their implications for prevention, rehabilitation, and treatment.

SOC 4195 Drugs and Society (3 q.h.) Introduction to the sociology of drugs. Examines social definitions of drugs, conditions of their use, and socialization into drug use. Considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs is considered.

SOC 4202 Sociology of Drinking (3 q.h.) Exploration of how different groups and societies organize drinking as a social act, and the consequences of that organization. Covers the cultural meaning assigned to drinking, the social elements found in all drinking situations, how members of social groups learn how to drink, and the social and psychological functions of drinking.

SOC 4203 Sociology of AIDS (3 q.h.) Studies the emergence of HIV and AIDS, the transmission of the disease, and the various effects of the disease on individuals. Also explores government and media reactions to AIDS, racism and homophobia in the public's

response to AIDS, and the "moral status" of the disease.

SOC 4205 Law and Society (3 q.h.) Topics include functions of law in modern society; legislation, litigation, and adjudication as social processes; the legal profession, the courts, and the administration of justice; laws and judicial decisions on controversial social issues; and laws regulating domestic, industrial, and other major social relationships.

SOC 4215 Medical Sociology (3 q.h.) Examination of sociological concepts and research relating to patterns of behavior in the areas of health and disease. Emphasizes the family, community, medical organizations, class, and status as social subsystems related to the field of health.

SOC 4225 Social Gerontology (3 q.h.) Analyzes issues and questions of aging, with special attention to social and economic consequences of the aging process, such as retirement and productivity, health care problems, nursing home residences, widowerand widowhood, and the approach of death. Gives examples relating to aging in other cultures in a search for new answers to social problems of aging in the United States. Discusses how to anticipate, cope with, and even prevent problems of aging that concern self, family, and clients or patients.

SOC 4226 Work, Leisure and Aging (3 q.h.) Includes discussion of theory and practice of leisure time activities as they relate to the older adult. Examines the social, cultural, and economic aspects of work, including housework, and the meaning of leisure. Explores various types of leisure activities and resources as well as how to build skills and design and implement activities.

SOC 4235 Death and Dying (3 q.h.) Examines the treatment of death and dying, including problems faced by health care professionals, family members, institutions, the funeral industry, and the dying themselves. Covers cross-cultural perspectives, the social distribution of mortality, the changing nature of death, and the ethical problems in determining life and death with particular attention to such issues as abortion, suicide, and ceasing medical intervention.

SOC 4240 Sociology of Human Service Organizations (3 q.h.)

Explores the contradiction between what human service organizations set out to do and what they actually accomplish. Includes how human service organization goals are defined, how clients become labeled, and the societal constraints placed on clients, workers, and the organizations.

SOC 4241 Human Services Professions (3 q.h.)

Covers human services, viewed from the perspectives of the recipient, the worker, and the society at large. Includes analysis of why they are needed, how agencies and programs have developed, and the basic skills, attitudes, values, and knowledge required of the human service worker today.

SOC 4245 Poverty and Inequality (formerly Sociology of Inequality) (3 q.h.) Historical analysis of American class and ethnic differences, drawing on comparisons with other countries. Includes critical evaluation of sociological research and theories relating to the causes and effects of poverty and societal responses to it. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, premed, and pre-law.

SOC 4255 Sociology of Sport (3 q.h.) Topics include games and sport from a sociological perspective, with particular reference to contemporary American society. Includes the role of play in modern society, the social organization of specific games and sports, and the relation of organized sport to the larger society.

SOC 4260 Introduction to Social Work Practice 1 (3 q.h.)

Explores the functions of the helping profession of social work, its settings and methods. Covers specific techniques, such as interviewing, history-taking, and recording skills.

SOC 4261 Introduction to Social Work Practice 2 (3 q.h.)

Continuation of SOC 4260 with particular attention to the functioning of social workers in selected settings. *Prereq. SOC 4260 or equiv.*

SOC 4262 Introduction to Social Work Practice 3 (3 q.h.)

Continuation of SOC 4261. Emphasizes enhancement of practice skills. Prereq. SOC 4261 or equiv.

SOC 4276 Popular Culture (3 q.h.) (formerly Sociology of Popular Culture) Significance of expressions of popular culture, such as film, television, music, and literature is explored. Examines media production, organization, technology, and audience consumption. Also covers the relationship between popular culture and existing socio-economic institutions.

SOC 4300 Social Theory 1 (3 q.h.)

Historical survey of sociological theorists, including the work of de Tocqueville, Comte, Marx, Durkheim, and Cooley. Prereq. Instructor's permission or 12 q.h. in Sociology-Anthropology.

SOC 4301 Social Theory 2 (3 q.h.)

Covers major theoretical issues in sociology. Discussion concentrates on systematic questions and topics rather than on particular theorists, but material is drawn from such theorists as Weber, Simmel, Thomas, Mannheim, Merton, and Parsons. *Prereq. SOC* 4300 or equiv.

SOC 4302 Social Theory 3 (3 q.h.) Seminar focuses on questions of theoretical interest, such as the problem of order, the problem of change, and the role of the individual in change. Students present papers in class. *Prereq. SOC 4301 or equiv.*

SOC 4303 Social Theory (Intensive) (9 q.h.) Same as SOC 4300, SOC 4301 and SOC 4302. Prereq. Instructor's permission or 12 q.h. in Sociology-Anthropology. Not open to students who have credit for SOC 4300, SOC 4301, or SOC 4302.

SOC 4310 Class, Power, and Social Change (3 q.h.)

Discusses theories of social equality and inequality as applied to the exercise of power and to the growth and development of social movements and group conflict. Takes a large-scale, social-change point of view.

SOC 4331 Social Research Methods 1: Generating and Investigating Research Problems (3 q.h.)

Examines methods for gaining knowledge through social research. Emphasizes the practical aspects of research, such as the prob-

lems sociologists face in doing research and how they have been solved. Students are required to design a small study. *Prereq.* 120 *q.h.*

SOC 4332 Social Research Methods 2: Tabulating and Analyzing Social Data

Covers methods of tabulating, presenting, summarizing, and analyzing data, including elementary descriptive and inferential statistics and how to use them. Emphasizes statistics as a tool and introduces the use of the computer. *Prereq. SOC 4331 or equiv.*

SOC 4333 Social Research Methods 3: Doing Social Research (3 g.h.)

Students carry out the study they designed in SOC 4332, analyze data, and report results. Includes the ethics and politics of social research and the interrelationship of social action, social research, and theory building. *Prereq. SOC 4332 or equiv.*

SOC 4805 Field Work in Sociology (6 q.h.) Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the workplace. See page 24 for details. Prereq. completion of 15 q.h. in Sociology and Program Director's approval.

SOC 4815 Advanced Tutorial 1 (3 q.h.) Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

SOC 4816 Advanced Tutorial 2 (3 q.h.) See SOC 4815.

SOC 4820 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. *Prereq. 96 q.h., 3.5 q.p.a.*

SOC 4821 Honors Program 2 (4 q.h.) See SOC 4820.

SOC 4822 Honors Program 3 (4 q.h.) See SOC 4820.

SOC 4830 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. *Prereq.* 96 q.h., 3.0 q.p.a.

SOC 4831 Independent Study 2 (3 q.h.) See SOC 4830.

SOC 4832 Independent Study 3 (3 q.h.) See SOC 4830.

TECHNICAL COMMUNICATIONS

TCC 4101 Technical Writing 1 (3 q.h.) Introduction to basic technical writing skills, emphasizing selecting and organizing data. Includes audience analysis, research techniques, and descriptions of objects, mechanisms, and processes. Provides practice in descriptive writing, classification and definition, paragraphing, and preparing technical documentation outlines. Includes frequent technical writing exercises and projects applicable to both software and hardware writing tasks. A writing proficiency test is given

TCC 4102 Technical Writing 2 (3 q.h.) Application of the information gathering, organizational, and technical writing skills acquired in TCC 4101 to more advanced projects. Extensive practice in formatting, organizing, writing, and editing technical reports. *Prereq. TCC 4101*.

at the first class meeting.

TCC 4103 Technical Writing (Intensive) (6 q.h.)

Same as TCC 4101 and TCC 4102. A writing proficiency test is given at the first class meeting.

TCC 4105 Editing for Science and Technology (3 q.h.)

Covers fundamentals of editing as they apply to scientific, technical, and engineering writing. Examines the role of the editor in business, industry, and the sciences; basic editorial services such as proofreading, copy and content editing, production editing, and project editing; analysis and critique of manuscripts; work with authors; the editor as writer and interviewer; and science interpretation and technical translation. Accelerated work for students already skilled in spelling and grammar. Prereq. TCC 4101 or instructor's permission.

TCC 4106 Advanced Editing for Science and Technology (3 q.h.)
Continuation of TCC 4105. Prereq. TCC 4105.

TCC 4110 Technical-Promotional Writing (3 q.h.)

Explores structure, style, and graphic presentation of technical-promotional writing in a high-tech environment. Students are trained to combine technical knowledge and writing skills in developing quality technical brochures, articles, product catalogs, demonstration kits, slide presentations, and video scripts. Prereq. TCC 4101, TCC 4102, or instructor's permission.

TCC 4301 Computer Software Technical Writing 1 (3 q.h.)

Introduction to the tasks and problems unique to software technical writing. Includes review of fundamental software concepts, the role and importance of software documentation, component parts of software technical manuals and their purposes, tutorial and reference functions of manuals, research tools for manual writing, and the writing process itself. *Prereq. TCC 4101 and MIS 4102 or instructor's permission*.

TCC 4302 Computer Software Technical Writing 2 (3 q.h.)
Continuation of TCC 4301. Prereq. TCC 4301.

TCC 4303 Seminar in Software Technical Writing (3 q.h.)

An advanced case-study seminar on contemporary problems in technical writing for the working or prospective writing professional. Emphasizes integrating the viewpoint of the software developer with the task-oriented needs of the end-user. Includes system manual design; computer design; modularity; and system evolution. *Prereq. TCC 4302 or instructor's permission.*

TCC 4304 Computer Software Technical Writing (Intensive) (6 q.h.) Same as TCC 4301 and 4302. Prereq. TCC 4101 and MIS 4102 or instructor's permission.

TCC 4311 Instruction Manual Writing 1 (formerly Hardware Technical Manual Writing 1) (3 q.h.)

Introduction to the fundamentals of technical manual writing, including the theory and practice of manual design, organization, and content. Covers copyright law, product liability, graphic design, readability, manual specifications and standards, illustrations, and reproduction techniques. Emphasizes hardware operations manuals. Includes individual and class design and writing projects. *Prereq. TCC 4101 and TCC 4102*.

TCC 4312 Instruction Manual Writing 2 (formerly Hardware Technical Manual Writing 2) (3 q.h.)

Application of skills acquired in TCC 4311 to an entry-level technical manual writing project. Students elect individual or group writing and production projects for hightechnology equipment or systems lacking adequate documentation. Includes instruction in writing safe, legible operating instructions and descriptions of installation procedures, principles of operation, and maintenance. Also covers manual changes and updates. Prereq. TCC 4311 or instructor's permission.

TCC 4313 Instruction Manual Writing Intensive (6 q.h.)
Same as TCC 4311 and TCC 4312. Prereg. TCC

Same as TCC 4311 and TCC 4312. Prereq. TCC 4101 and TCC 4102.

TCC 4320 Proposal Writing (3 q.h.)

Background in the preparation of proposals, including how to analyze a request for proposal or bid set. Introduces the various types of proposals generated by industry and provides an opportunity to prepare a proposal in a simulated situation, through role playing and participation on a proposal preparation team. Includes considerable analysis and writing practice. Prereq. TCC 4102 or instructor's permission.

TCC 4330 The Business and Technical Presentation (3 q.h.)

Application of the principles of technical communication to audiovisual presentations. Includes audience analysis, techniques of organization, script preparation, media selection, the design and production of visuals, the influence of physical factors on communication, and the elements of effective delivery. Participants prepare and deliver presentations and receive video playback and peer critiques.

TCC 4335 Introduction to On-line Documentation (formerly Introduction to Hypertext Development) (3 q.h.)

Designed to give students essential background in developing field of hypertext. Topics include theory and practice, authoring systems, hypermedia topologies and user navigation, hypermedia path mechanisms, and hypertext-based writing tools. *Prereq. TCC* 4101 and 4102.

TCC 4336 Medical Writing (3 q.h.)

Focuses on the scope of medical communications, the role of technology and the medical communicator, patient education, clinical trial reporting, technical/legal issues such as FDA and UL approvals, pharmaceutical writing, and medical editing. *Prereq. TCC 4101 and 4102*.

TCC 4337 Writing for the Biotechnology

Industry (3 q.h.)

Examines technical communication in the field of biotechnology, including the areas of health care, agriculture, and industrial "bioprocessing." Explores the role of the biotechnology technical communicator in areas such as marketing and business communication. Covers documentation common in the research, development, and marketing of new products. Provides practice in structuring information into formats such as research articles, development proposals, protocols and instructions, and technical briefings with emphasis on audience analysis as well as content and purpose. Introduces stylistic conventions standard in the life sciences. Integrates documentation planning and project management into the product development cycle.

TCC 4340 Documentation Development and Completion (formerly Technical Writing Portfolio Development) (3 q.h.) In this final course before graduation, students apply organizational and communications skills acquired in the technical writing program. Each student is responsible for finding a "real-world" product that needs technical documentation. Working with the instructor, the student then develops the documentation from an initial outline to a final completed manual that will be used with the product. (Not a regularly scheduled course. Students must contact Liberal Arts Of-

TCC 4350 Concepts of Modern Technology

fice to register to work with an instructor.)

1 (3 q.h.)

Surveys applications of physical science to mechanical devices and introduces the laws of thermodynamics. Considers the influence of material properties on design and manufacturing techniques. *Prereq. MTH 4006 or equiv.*

TCC 4351 Concepts of Modern Technology

2 (3 q.h.)

Surveys' applications of physical science to electrical and electronic devices and introduces electronic circuit design. Includes a comparison of various devices used for amplification and control, and a study of the development of the electronic digital computer and the components involved in the manufacture of computers. *Prereq. TCC 4350.*

TCC 4802 Advanced Tutorial 1 (3 q.h.)
Opportunity to take an upper-level course independently. See page 24 for details. *Prereq.* 87 q.h.

TCC 4803 Advanced Tutorial 2 (3 q.h.) See TCC 4802.

TCC 4805 Field Work in Technical Communications (6 g.h.)

Designed to enhance career development by allowing students to earn credit for the application of their academic backgrounds to practical problems in the workplace. See page 24 for details. Prereq. completion of 18 q.h. in Technical Communications and Program Director's approval.

TRANSPORTATION

TRN 4301 Elements of Transportation 1

(3 q.h.)

Introduction to regulatory, economic, and management aspects of transportation. Covers concerns of shipping industry, government, and carriers. Includes history of cost, rate-making, operations, entry, mergers, and intercity passenger and cargo carriage. Essential to students in business, law, or government.

TRN 4302 Physical Distribution Management 1 (3 q.h.)

Introduction to the physical distribution management concept. Studies time and place utility of manufactured products. Includes customer service and profitability requirements: getting merchandise to the customer at the right time, place, and in the right condition. Covers transportation alternatives, inventory control, warehousing, cost control, and location strategy. Contemporary texts and case methods are used.

TRN 4303 Elements of Transportation 2

Continuation of TRN 4301. Examines new thrust of lower costs, including contracting and negotiating for carrier service that has resulted from deregulation. *Prereg. TRN* 4301.

TRN 4304 Physical Distribution Management 2 (3 q.h.)

Continuation of TRN 4302. Analytical skills developed through presentation of problems and cases. *Prereq. TRN 4302*.

TRN 4305 Traffic Management 1: Rates and

Tariffs (3 q.h.)

Includes the interpretation and use of tariffs. Examines classifications, rate scales, tariff rules, rate-making procedures, and ICC law and practice. *Prereq. TRN 4301*.

TRN 4306 Traffic Management 2: Selected Topics (3 q.h.)

Further study of traffic management, covering such topics as routing, claims, insurance, consolidation, and packaging. *Prereq. TRN* 4305.

TRN 4308 Corporate Travel Management 1

(3 q.h.)

This course introduces the student to the basic aspects of corporate travel management. Topics include the travel management environment, role of the travel manager, and business ethics and legal aspects of travel management. Also covered are corporate travel planning, understanding business travelers' needs, conference planning, travel industry operations, and travel aspects of conference planning.

TRN 4309 Corporate Travel Management 2

(3 q.h.)

This course expands upon areas covered in TRN 4308. Topics include negotiating travel arrangements, budget and fiscal aspects of travel management, travel management marketing, using corporate resources to support travel management, developing and managing corporate travel policy, managing corporate travel policy compliance, and future trends in passenger transportation. *Prereq. TRN 4308*.

TRN 4316 Carrier Management (3 q.h.) Explores the transportation system from the carrier viewpoint. Covers managerial response to a heavily regulated and rapidly expanding environment. Includes carrier decision-making involving routes, scheduling, financing, and pricing of services.

TRN 4321 Transportation Negotiations (3 q.h.)

Principle elements of transportation regulation, public policy, and the role of federal and state regulatory agencies are covered. Includes types of commerce, carriers, and services subject to changing regulation, entry and exit requirements, economic and cost considerations, and selective rate and tariff construction rules. Examines industry prac-

tices covering performance, requirements, liabilities, and responsibilities of shippers, regulated carriers, and exempt forms of transportation. Discusses rules and procedures established by the ICC and Massachusetts DPU. Prereq. TRN 4301.

TRN 4323 Transportation of Hazardous

Materials (3 q.h.)

This course provides the student with an awareness of the various aspects of transporting hazardous materials. The course identifies the role of the various regulatory agencies, the applicable regulations, the necessary documentation, training requirements, emergency response requirements, and basic roles and definition as they relate to the transportation of hazardous materials.

TRN 4325 Management of Warehouse Operations (3 q.h.)

Management of warehouses is analyzed. Includes site selection, construction, finance, operations, measurement of performance, and warehouse technology.

TRN 4334 Private Trucking (3 q.h.) Explores the formation of a private trucking operation from a management focus. Includes legal guidelines, purchase versus lease, operations, and performance measurement.

TRN 4340 Air Transportation (3 q.h.) Topics include economics and regulation of air carriage certified by the Civil Aeronautics Board. Includes entry, operations, pricing, mergers, cost analysis, and financing.

TRN 4341 Commuter Transportation (3 q.h.) Examines the scope and status of transportation in the metropolitan area. Includes planning and financing urban transportation systems, the role of local, state, and federal government units, and the problems of transit management.

TRN 4342 Transportation Loss, Damage and Other Claims (3 q.h.)

Covers rules, regulations, and other pertinent elements of transportation claims resulting from the loss or damage of cargo, overcharges and undercharges, and related carrier and shipper activities.

TRN 4350 International Transportation and Distribution Management (3 q.h.) Examines the safe and efficient overseas transportation of products by air or water. Covers major indirect supporting business and agencies involved in the international movement of people and goods.

TRN 4600 Honors Program 1 (4 q.h.) Opportunity to undertake an in-depth research study project. See page 24 for details. Prereq. 96 q.h., 3.5 q.p.a.

TRN 4601 Honors Program 2 (4 q.h.) See TRN 4600.

TRN 4602 Honors Program 3 (4 q.h.) See TRN 4600.

TRN 4701 Independent Study 1 (3 q.h.) Opportunity to undertake special research. See page 24 for details. Prereq. 96 q.h., 3.0 q.p.a.

TRN 4702 Independent Study 2 (3 q.h.) See TRN 4701.

TRN 4703 Independent Study 3 (3 q.h.) See TRN 4701.

TRN 4800 Advanced Tutorial 1 (3 q.h.) Opportunity to take upper-level course independently. See page 24 for details. Prereq. 87 q.h.

TRN 4801 Advanced Tutorial 2 (3 q.h.) See TRN 4800.

TRN 4900 Fieldwork (6 q.h.) Opportunity to enhance career development by applying academic background to practical problems in the workplace. See page 24 for details. Prereq. Approval of Program Director.

Tuition and Fees

Tuition

Tuition for all credit courses is \$150 per quarter hour of credit. Checks and drafts for all charges are to be made to the order of Northeastern University. Charges for registration and tuition for special courses are at the rate specified for each course, with the exception of drama and nontutorial courses. There is no reduction in fees for auditing courses.

Noncredit courses are charged at quarter-hour rates comparable to those of

credit courses meeting on an equivalent contact-hour schedule.

Students are not permitted to attend class sessions or take any examination or test until they have paid their tuition fees or have made satisfactory arrangements

for payment.

It is the student's responsibility to ensure that all tuition charges and fees are paid when due. If a bill has not been received prior to the start of classes each quarter, the student should come in person to the Bursar's Office (254 Richards Hall, 617-373-2270), where a bill will be processed.

Any discrepancies in billing should be immediately brought to the attention of the Bursar's Office. If there is a billing problem, the undisputed portion of the bill should be paid on time to avoid any additional late fees. Failure to receive a bill through the mail or to pay the undisputed portion of the bill is not justification for late payment of amounts actually owed.

Students will not be advanced in class standing or permitted to re-enroll in the University nor will degrees be conferred until all financial obligations to the

University have been met.

Tuition for Courses in Other Northeastern Departments or Colleges

University College students assigned to courses in other departments or colleges of the University are charged the tuition fees effective in the departments or colleges in which they are enrolled.

Initial Registration Fee

A nonrefundable \$10 registration fee for first-time University College students is billed with tuition fees.

Three Payment Option

Northeastern University offers a three payment option plan. The plan is administered by the Tuition Plan of New England. Information regarding this plan may be obtained by calling 1-800-343-0911. There is a \$20.00 fee for participation in this program. Applications for the Three Payment Option must be completed as described below:

 Quarter
 Application Deadline

 Fall
 October 1, 1994

 Winter
 January 7, 1995

 Spring
 April 8, 1995

 Summer
 June 24, 1995

Such arrangements should be made before the end of the first week of the quarter or within one week of the date of registration if the student enters late. Failure to take immediate action will result in a late payment fee of \$75. Transcripts and other academic records will not be released until all financial obligations to the university have been met.

Late Payment Fee

Bills for tuition and fees are payable in accordance with the due date shown. A late payment fee of \$75 is charged for failure to make payments in accordance with the prescribed regulations.

Tuition Underwritten by Employers

An increasing number of companies are underwriting part or all of the cost of tuition of students in their employ. In cases where payment is to be made directly by the employer to the University, the student should furnish the Bursar's Office with a purchase order covering registration or a statement from an officer of the company certifying that the company is underwriting the tuition. In cases where students are being reimbursed by their employer, tuition must be paid by the student according to the prescribed regulations to avoid late payment charges.

Veterans' Benefits

Any veteran covered by Public Law 89-358 should report to 126 Hayden Hall to fill out the proper enrollment forms.

Refund of Tuition

The general policy in all schools and colleges of the University with respect to refunds of tuition is as follows: the University provides all instruction on an academic-quarter basis, for which students pay at the beginning of each quarter. Tuition refunds are granted through the first four weeks of a quarter only when specific conditions are met and are granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar in 120 Hayden Hall. Nonattendance does not constitute official withdrawal. Questions regarding refunds should be discussed with the Bursar.

Refunds are granted in accordance with the following schedule:

Official withdrawal filed within	% of tuition credited	
First week of quarter	100%	
Second week of quarter	75%	
Third week of quarter	50%	
Fourth week of quarter	25%	

New Low Rate for Intensives

University College offers a selection of six-quarter-hour courses. Intensives running on Friday evenings and Saturdays will be offered at a special reduced tuition rate of \$700 (\$200 less than the normal tuition). Intensives running Mondays through Thursdays will be offered at the special reduced rate of \$800 (\$100 less than the normal tuition). Check the current *Schedule Guide* for a list of these courses.

Default Policy

In cases where the student defaults on his/her tuition payments, the student shall be liable for not only the outstanding tuition, but also for reasonable collection costs and attorneys' fees incurred by the University in collecting unpaid tuition.

Fees

Student Center Fee

All students in University College on the Huntington Avenue campus are charged \$8.25 each quarter for the services available in the Student Center.

Laboratory Fees

Students enrolled in courses that carry a laboratory fee must purchase a Laboratory Fee and Deposit Card from the Cashier's Office (\$15 for extra cards).

A fee of \$45 is charged for biology courses. For chemistry courses, cards cost \$60 per quarter with the possibility of a \$5 refund at the end of the quarter, depending on breakage. Upon completion of the course or withdrawal during the quarter, the student must check his or her status with the laboratory attendant. The Cashier's Office will then refund any unused balance shown on the card.

Other fees include:

Arts and Crafts Lab Art Studio Courses	\$25.00 \$35.00	Film Courses Food Prep Couses	\$25.00 \$25.00
Computer Graphics Lab EMT/Paramedic Lab	\$35.00	Media Studio Lab	\$35.00
EMI/ Faramedic Lab	\$25.00	Medical Lab/Science Lab Radiology Lab	\$35.00 \$25.00

Special Rates

Nursing courses and the EMT Basic course are offered at special rates. Please consult the current *Schedule Guide* for those fees.

Music students enrolled in music instruction pay a special rate. For details contact Marjorie Atlas, University College Music Coordinator, 351 Ryder Hall, telephone 617-373-2440 or 617-373-2442.

Mandatory Medical Insurance Fee

All Northeastern University students who are either classified as full-time or who are in a degree program carrying a courseload of 9 credits or more are required by law to be covered by medical insurance. You will be enrolled automatically in the University's plan at a \$560.00 charge to your Northeastern account. Or, if you are covered by comparable medical insurance, you may waive the university's plan. Northeastern University medical insurance waiver forms are available at the Bursar's Office, 254 Richards Hall, 617-373-2270.

Missed Final Examination Fee

Students absent from the regularly scheduled final examination at the end of a course may petition for a missed final examination. The fee for each examination requested by the student is \$50. The fee must be paid when the petition is filed in the Office of Academic and Student Affairs.

Transcripts

Students may request official transcripts of their grades at the Registrar's Office. There is a charge of \$2 per copy, payable in advance. Unofficial transcripts are issued free of charge.

Financial Aid

The Office of Financial Aid, located at 356 Richards Hall, offers several types of assistance to part-time and full-time University College students. All awards are based on financial need. Aid granted from programs sponsored by the federal or state government is dependent upon the amount of funding allocated to Northeastern University. Federal regulations require that students who receive financial aid funds be United States citizens or permanent residents.

Application Procedure

All students applying for aid must submit a Free Application for Federal Student Aid (FAFSA) to the Federal Student Aid Programs. Upon receipt of the FAFSA, the processor will analyze the information and send to the student a Student Aid Report (SAR). If the information on the SAR is correct, the student should remit the information to the Office of Financial Aid.

Northeastern University also requires its students to complete an Institutional Application. The Institutional Application will provide your counselor with

additional information that is not on the FAFSA.

Federal regulations require that students submit a Financial Aid Transcript (FAT) from each school they have previously attended to the Office of Financial Aid at Northeastern University before they can receive financial aid at Northeastern. This is required even if you did not receive aid at the other institution(s). If your transcript indicates you are in default on a loan or you owe a refund, you will be ineligible for all types of financial aid until this status is cleared.

All application materials are available at the Office of Financial Aid. Students should begin the application procedure at least twelve weeks before the start of the quarter in which they plan to enroll. Students must apply for financial aid

each academic year.

In order to be eligible for financial aid, students must be admitted into a degree program prior to the beginning of the academic quarter. Students admitted after the start of the quarter will not be eligible for aid until the next academic quarter. Students not yet admitted into a degree program are advised to contact the University College Office of Academic and Student Affairs, 180 Ryder Hall, (617) 373-2400.

Satisfactory Academic Progress

For all students who are receiving financial aid for the first time on or after July 1, 1987, satisfactory academic progress will be determined based on having achieved a 2.0 QPA after the completion of the second grade level and maintaining that minimum until completion of the degree. Students not achieving a 2.0 QPA or dropping below that minimum after their second grade level will not, by Federal law, be eligible for financial aid.

Financial Aid Programs

Financial aid to students is offered in the form of loans and grants. The following programs are available:

Federal Pell Grants

Based on a student's financial information, a student may be eligible for a Federal Pell Grant. The Federal Pell Grant Program is a federal aid program designed to provide financial assistance to undergraduate degree candidates. Approximately six weeks after a student has filed the FAFSA, the Federal Pell

Grant Processor will send the student a Student Aid Report (SAR). If a student is eligible for a Federal Pell Grant, the SAR must be submitted to the Office of Financial Aid.

If eligible for a Federal Pell Grant, the amount of the grant will vary depending upon the number of quarter hours a student is enrolled in for each quarter. Students with a prior bachelor's degree are not eligible to receive Pell Grants.

Federal Stafford Student Loan Program

The Federal Stafford Student Loan Program enables a student to borrow a maximum of \$2,625 during the freshman academic year, \$3,500 during the sophomore year, and \$5,500 for subsequent years from a participating bank or other financial institution. The federal government pays the interest while the student is in school. This loan must be repaid. The legal maximum loan limit for undergraduate students is \$23,000.

Eligibility to participate in the Federal Stafford Student Loan Program is based on need in accordance with federal regulations. Students must be admitted into a degree program and enrolled in at least a half-time (6 quarter hours per quarter)

basis in order to be eligible for this loan.

In order to have a loan processed by the Financial Aid Office, a student must have a complete financial aid application on file, have received a letter of eligibility from our office, and have submitted a Federal Stafford Student Loan Application. Applications for the loan are available from local lending institutions and the Office of Financial Aid.

Repayment of the loan usually begins six months after a student withdraws, graduates from an educational institution, or ceases to carry at least a half-time course load. The repayment period may be as long as ten years. The amount of the payments depends upon the size of the debt, but must be at least \$50 per month.

Repayment on loans may be deferred under certain circumstances. For details,

contact your lender.

Students who borrow funds through this program must report any of the following changes to their lenders:

withdrawal from school;

transfer to another school;

- reduction of course load to less than half time;
- change of address or parents' address; and

change of name.

Additional information about financial aid is available from the Office of Financial Aid, 356 Richards Hall, 617-373-3190.

All federal financial aid programs are subject to change depending on adequate and continuing federal support.

State Scholarships

Eligibility for state scholarships is based on need and is determined by the Scholarship Office in each state. If you completed a FAFSA, you will receive a separate letter from your State Scholarship Office notifying you of your eligibility. In order to be eligible for a state scholarship, a student must be admitted into a degree program and enrolled in at least 12 quarter hours per quarter for 2 quarters during the academic year. A student with a prior bachelor's degree is not eligible to receive a state scholarship. Contact your State Scholarship Office for more information.

Scholarships

The following University College and School of Engineering Technology scholarships and awards are available to students who have been accepted as

degree candidates and are in good academic standing.

Scholarships are awarded once a year by the Scholarship Committee. Final selection of scholarship recipients is usually made in late June, followed by the awarding of the scholarships in late July or early August. Funds are usually applied to tuition expenses for the following academic year. Awards range in amount from \$500 to \$1,000.

Application Procedure

At the end of January, a mailing list of students who have requested applications is prepared and applications are mailed out with the stipulation that they be completed and returned to the Office of the Dean by March 31. A student can be placed on the January mailing list by calling 617-373-2400 or TTY 617-373-2825 and leaving his or her name, address, and student ID number with the receptionist.

Dean Kenneth W. Ballou Family Scholarship Fund

The Dean Kenneth W. Ballou Family Scholarship Fund was established in 1986 by the generosity of the Kenneth W. Ballou family. Dean Ballou served Northeastern University in various capacities from 1957 to 1978, including as Director of Undergraduate Admissions, Dean of University Relations, Assistant to the President, Dean of Adult Education Programs, and Dean of University College. This scholarship is awarded annually to a University College student(s) who demonstrates financial need, academic promise, and leadership potential.

The Bookbuilders of Boston Scholarship

This scholarship was established in 1982 in memory of Martin B. Sweeney, who taught publishing courses for many years at Northeastern. The funds have been provided by The Bookbuilders of Boston, a professional organization, to support the education of students interested in book publishing. To be eligible for the award, a student must be able to demonstrate interest in publishing as a career, must be taking courses related to publishing and the graphic arts, and must become an active part of the organization.

James A. Buczel Memorial Scholarship

This scholarship was established in 1988 in memory of James A. Buczel, who received his Associate in Science degree in 1978. The endowment funds were provided by the family, friends, and associates of Mr. Buczel who was a member of the U.S. Customs Service of the Department of the Treasury. He lost his life in the line of duty while inspecting cargoes on Sunday, October 9,1988 in New Haven, Connecticut. The income from this memorial scholarship fund is to be awarded to undergraduate students in University College who are majoring in Criminal Justice and demonstrate financial need, academic promise, and soundness of character.

Dorothy G. Cooley Scholarship

This scholarship was established in 1988 by Dorothy G. Cooley, a 1960 graduate of the evening division of The School of Business, now University College. The income from this fund is to be awarded to responsible women students who are candidates for a bachelor's degree and who have demonstrated soundness of character and who have above average scholastic ability.

Henry J. Doherty Memorial Scholarship

The Henry J. Doherty Memorial Scholarship Fund was established in 1987 through the generosity of Doris R. Doherty, as a tribute to her late husband, a 1953 graduate of the Evening School of Business and a successful business leader in the field of legal publishing. The income from the scholarship is awarded annually to deserving students with demonstrated financial need who are pursuing part-time evening study and have been accepted as degree candidates.

Theodore S. D'Orlando Scholarship Fund

This fund was established in 1991 by Theodore S. D'Orlando, a graduate of the evening School of Business, Class of 1951. Past president of the Alumni Association and member of The National Council, Husky Associates, and The Huntington Society, Mr. D'Orlando earned an MBA from the College of Business Administration in 1957. Income from this fund is used to assist part-time students of average academic record who are enrolled in a University College degree program and are motivated to improve their scholastic standing, show potential to succeed, and whom without financial assistance could not attend Northeastern University.

Electronics Industries Personnel Association Scholarship

This scholarship was established in 1980 through the generosity of the Electronics Industries Personnel Association. The income is awarded annually to one or more students whose studies, to a significant extent, are in the field of human resources management at University College. Recipients shall demonstrate financial need, soundness of character, and academic stability.

Howard W. Evirs, Jr. Scholarship

This scholarship fund was established in 1991 by Howard W. Evirs, Jr., a graduate of the College of Engineering, Class of 1951, and the Graduate School of Business, Class of 1970.

It is Mr. Evirs' desire to provide financial assistance to a single parent, preferably a female, enrolled in any full-time or part-time baccalaureate program of the University who has demonstrable financial need and proven academic excellence. The income from the scholarship fund which is administered by the Financial Aid Office will be awarded annually.

Students should apply to Northeastern University/Office of Financial Aid, 356

Richards Hall, Boston, MA 02115 regarding the above scholarship.

Vincent A. Forte Memorial Scholarship

This scholarship was established in 1985 in memory of Vincent A. Forte, a graduate of Northeastern University. The endowment funds were provided through the generosity of his family, friends, and associates. Forte was an ambitious student pursuing a full-time business career while attending school parttime. He received an associate's degree from Lincoln Institute in 1957, a Bachelor of Business Administration degree in 1958, and a Master of Business Administration degree in 1967. The income from this fund is awarded to undergraduate students in University College who are pursuing a bachelor's degree in business, who demonstrate financial need, and who are maintaining a cumulative qualitypoint average of 3.0 or better after completing at least 44 quarter hours of credit.

Chester W. Higgins Memorial Scholarship

The Chester W. Higgins Memorial Scholarship was established in 1991 by the generosity of Mrs. Marion Higgins, as a tribute to her late husband. Chester (Chet) Higgins was a senior lecturer in the Business Administration program of University College for almost forty years. He also served as President of the Faculty Society and was instrumental in establishing the Faculty Society Memorial Scholarship program to benefit part-time students. To be eligible for this award a student should be majoring in management in University College and should demonstrate financial need, academic promise and soundness of character.

Kappa Tau Scholarships

The Kappa Tau Phi Sorority Scholarship Fund annually makes scholarship awards available to women students in the science, business, engineering, and liberal arts programs who rank highest at the end of the upper-middle year. In the event that the chosen student is eligible for an award of greater monetary value, the award is made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a course meeting at least two evenings per week and must be a candidate for a bachelor's degree. In determining the recipient, grades of all courses completed in prior years are considered.

Martin Luther King, Jr. Scholarships

This scholarship fund was established in 1969 in memory of the late Reverend Martin Luther King, Jr. Awards are made, as openings occur, to a limited number of adults from minority groups who would otherwise be unable to continue their education. Stipends can cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding summer quarter). Northeastern University's Office of Financial Aid, located in Richards Hall, administers these scholarships.

Angelina M. Lentini Scholarship

This scholarship was established in 1991 through the generous support of Angelina Lentini, a graduate of Lincoln College, class of 1967, and University College, class of 1969. This award is to be made to an entering freshman female student who has graduated from the Boston Public School system, and has demonstrable financial need. Recipients of this award may reapply in their upper class years for continued support. Interested students should apply to Northeastern University/Office of Financial Aid, 356 Richards Hall, Boston, MA 02115, regarding the above scholarship.

Alan A. and Shirley A. Mackey Scholarship Fund

The Alan A. and Shirley A. Mackey Scholarship Fund was established in 1987 upon the retirement of Alan A. Mackey from Northeastern University. Dean Mackey served Northeastern University in many capacities: as Dean of Administration, University Registrar, Dean of Continuing Education, and as a member of the mathematics faculty of University College. The scholarship fund provides annual scholarship awards to deserving University College students.

William J. McGovern Memorial Scholarship

The William J. McGovern Memorial Scholarship was established in 1978 by an anonymous donor to honor the memory of William J. McGovern. The donor wishes to assist others in realizing their potential through higher education. The income from this scholarship benefits worthy undergraduate students actively pursuing studies in University College or the School of Engineering Technology. Recipients must have declared a major, demonstrated financial need and academic achievement, and exhibited a high level of professional promise.

Helen (Boris) Melnik Memorial Nursing Scholarship

Helen (Boris) Melnik was one of the 3,236 graduates of the New England Deaconess Hospital's School of Nursing. Though taken ill early on in her own career, it is her family's hope that this scholarship will assist another practicing nurse in advancing in this caring profession. To be eligible for this award, a student should be a currently certified nursing assistant (CNA), licensed practical nurse (LPN) or registered nurse (RN) and demonstrate financial need, academic promise and the desire to continue a career in the nursing profession.

Timothy F. Moran Scholarship Fund

This scholarship fund was established upon the retirement of Dean Timothy F. Moran, Associate Dean at University College and Director of the Law Enforcement programs. During his second career as an educator, Dean Moran, a retired state police officer, was an innovator and leader in the education of law enforcement officers both in New England and throughout the world. His former students, colleagues, and friends made substantial contributions to establish this fund in his honor. This scholarship is awarded annually to students majoring in policing, security or corrections who demonstrate academic excellence and financial need.

James D. Mukjian Memorial Scholarship

This memorial scholarship fund was established in tribute to James D. Mukjian, a 1955 graduate of the School of Business who also received a graduate degree in business in 1964. Mukjian had worked with the U.S. Defense Logistics Agency, with Sylvania and with Raytheon before retiring. He was a Senior Lecturer, teaching Industrial and Business Management for University College for 25 years. He also served as President of the University College Faculty Society of Northeastern.

Eva Needle Memorial Scholarship

The Eva Needle Memorial Scholarship Fund was established in 1965 with the aid of the Norman Knight Charitable Foundation and is maintained through the generosity of the friends of Bob and Ted Needle in memory of their mother. The income from the fund is awarded annually to a deserving student in the accounting program who demonstrates superior academic achievement. The recipient is selected jointly by Ted Needle, a long-standing member of University College's accounting faculty, and the Scholarship Committee.

Harry Olins Memorial Scholarship

The Harry Olins Memorial Scholarship Fund was established as an expression of a belief in University College students and "what they stand for." The fund, presented by Mrs. Olins in recognition of her husband's long service on the business faculty, makes available an annual tuition award to students who, in terms of scholastic achievement, character, and personal need, best typify the spirit of Northeastern University. To be eligible for this award, the student must be a business administration degree candidate and carry a full academic load during the school year.

Nancy Lee Patterson Memorial Scholarship

This fund was established in 1988 by the family and friends of Mrs. Nancy Lee Patterson at the time of her death. Income from the fund is awarded annually to female students, age 35 or over, attending University College, who demonstrate financial need, soundness of character, and academic stability.

Sigma Epsilon Rho Honor Society Scholarship Awards

The Sigma Epsilon Rho Honor Society Scholarship Awards, established in 1974 by the membership of the Society, are awarded annually to undergraduate students of University College and the School of Engineering Technology. Eligible students must have a cumulative quality-point average of 3.25 or better after completing 75 percent or more of their required studies.

The Stotsky Award

The Stotsky Award was created in 1990 when Dr. Bernard A. Stotsky, after 28 years of dedicated service as a faculty member and Chief Psychiatrist at the Lane Health Center, established a fund at Northeastern University in memory of his

parents, George and Bess Stotsky.

A cash prize of \$250 will be presented annually to one or more students who have exhibited an unusual understanding of, and sensitivity to, Jewish history with particular reference to the Holocaust period. Works submitted for consideration may include, but are not limited to, research in the field, special projects, programs or activities designed and implemented to enhance understanding of the Holocaust.

Any student in good standing, currently enrolled in any school, department or program of Northeastern University is eligible to receive the Stotsky Award. Submissions made by March 1st will be eligible for the current year's award.

This award is administered by the Religious Life Office of Northeastern University. Interested students should contact them at (617) 373-2728 for further details. The mailing address is: Religious Life Office, Room 207 Ell Building, Northeastern University, Boston, MA 02115.

H. Patricia Taylor Scholarship Fund

The H. Patricia Taylor Scholarship Fund was established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business. The scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor when she was obtaining her degree and is an attempt to provide similar funds to assist others in realizing their potential through higher education. The income from the fund is awarded annually to a student enrolled in University College or the School of Engineering Technology who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

U.S. Navy Field Training Supervisors Association Memorial Scholarship

A scholarship fund has been established through the generosity of the U.S. Navy Field Training Supervisors Association in commemoration of the Association's deceased members. The scholarship is awarded annually to a deserving student, selected by the Scholarship Committee, who is a management major working toward a bachelor's degree in the evening program at University College.

University College and the School of Engineering Technology Faculty Society Memorial Scholarship Awards

The Faculty Society of University College and the School of Engineering Technology offer several awards annually, primarily for excellence in studies, to bachelor's degree candidates in University College and the School of Engineering Technology who have carried and are currently carrying a minimum of twenty-four quarter hours annually. Applications, available during the winter quarter, must be returned before the spring quarter. These awards are given in commemoration of the Faculty Society's deceased members.

Roberta Macycove Wasserman Memorial Scholarship

This scholarship was established in 1976 through the generosity of family members and friends of Roberta Macycove Wasserman, who, at the time of her death in 1975, was pursuing liberal arts studies within University College. The income from the fund is awarded annually to a deserving female student who is a homemaker with family responsibilities and who is pursuing part-time studies within University College. The recipient shall demonstrate financial need, soundness of character, and academic stability.

Awards

John W. Robbins Prize

The John W. Robbins Prize was established in 1984 under the terms of the will of the late Lena C. Robbins, in memory of her husband, John W. Robbins, an alumnus of Northeastern University. The income from this memorial gift is awarded annually to the outstanding student (Class Marshal) of the graduating class of University College.

Facilities and Resources

Sport, Dance, and Exercise Facilities

Through its Cabot Center for Physical Education, Dockser Hall and Barletta Natatorium, Northeastern University offers a wide variety of specialized facilities. The Matthews Arena, with seating for more than 5,000 fans, provides home ice to the University's hockey teams and home court for the University's men's basketball teams. These facilities are available to currently enrolled University College students who show a part-time student ID and a photo ID.

Social and Professional Clubs

We welcome and encourage part-time students in University College and the School of Engineering Technology to join in most of the social and professional activities that are organized and run by the student body, with the assistance of the Student Activities Office (255 Ell Center). Call 617-373-2642 or TTY 617-373-4747 for more information.

Sigma Epsilon Rho Honor Society

Sigma Epsilon Rho is the University College honor society. It aims to promote fellowship among those students who have attained highest scholastic standing in the College; to stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of these selected men and women; to develop methods of mutual improvement and advancement among members; and to support high moral, professional, and scholastic ideals. Only honor graduates are eligible for admission to the Society. Admission is by invitation after nomination by the Society.

Ell Student Center

The Carl S. Ell Student Center provides facilities for student recreation and extracurricular activities. The Eugene J. Blackman Auditorium, with a seating capacity of 1300, is attached to the Center. Also included are special drama facilities, a ballroom, student offices, conference rooms, an indoor quad, a food court with seating for more than 1,000, an information booth, a copy center, a gameroom, a video arcade, rental computers and typewriters, television viewing areas, movie screenings, and a travel agency. The bookstore is adjacent to the Center.

Lane Health Center

A comprehensive program of medical care is provided to all full-time graduate and undergraduate students and part-time undergraduate students enrolled in 9 q.h. or more. The University maintains a Health Services Clinic which is open for emergencies at all times and is equipped to deal promptly with any medical condition that may arise.

Alumni Association

Upon graduation, you will join the more than 120,000 alumni united within the Alumni Association, which was established to promote a mutually rewarding relationship between Northeastern and its graduates. Association activities include the Homecoming celebration, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors. The Association has regional clubs across the country.

About Northeastern University

Profile of the University

At Northeastern University, we value part-time day and evening students as highly as we do our full-time students. You are important members of the academic community and reflect the changing profile of today's college student, which encompasses new concerns for lifespan learning and professional retraining. Northeastern supports your pursuit of personal and professional goals and wants to contribute to your success. You may join all of our students in taking full advantage of the academic resources and facilities we offer. In return, you contribute to the intellectual and cultural diversity upon which this urban institution thrives.

Founded in 1898, Northeastern University is incorporated as a privately endowed, nonsectarian institution. From its beginning, the University's mission has been to identify and address the educational needs of a diverse community and student body in distinctive and useful ways. Northeastern did not duplicate the programs of other institutions, but instead became a world leader in new areas of educational service. In particular, the University is known for its Cooperative Plan of Education, under which students alternate periods of work and study. All of Northeastern's undergraduate day colleges operate on the Cooperative Plan, and several of the University's graduate schools have structured their programs to include features of cooperative education. Today, the University is comprised of eight undergraduate colleges and nine graduate schools.

Our undergraduate colleges are:

Bouvé College of Pharmacy and Health Sciences

College of Arts and Sciences, including the School of Journalism

College of Business Administration

College of Computer ScienceCollege of Criminal Justice

College of Engineering, including the School of Engineering Technology

College of NursingUniversity College

Our graduate schools are:

Graduate School of Arts and Sciences

Bouvé College of Pharmacy and Health Sciences Graduate School

Graduate School of Business Administration

Graduate School of Computer Science
 Graduate School of Criminal Justice

Graduate School of Engineering

Graduate School of Nursing

Graduate School of Professional Accounting

School of Law

At Northeastern University, we respond to the needs of people who already hold jobs or are launched in careers, but who wish to advance or change their professional lives as well as pursue personal interests. The University offers a variety of educational options—both credit and noncredit—to suit your particular objectives. University College offers part-time courses leading to certificates and to associate's and bachelor's degrees. The School of Engineering Technology offers part-time evening and weekend associate's and bachelor's degree programs in technological areas, in addition to daytime undergraduate programs.

All formal courses of study leading to degrees through part-time programs are approved by the full-time day faculty of the Northeastern Basic Colleges concerned and are governed by the same qualitative and quantitative standards.

Where You'll Find Northeastern

The main campus of Northeastern University is a vibrant and progressive urban community. To all Northeastern students, the physical setting of the Boston campus extends opportunities to participate in the dynamic, exciting environment that we share with city residents. Built around a quadrangle, the campus is divided by Huntington Avenue, a major artery. It is located in the midst of such cultural landmarks as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library. You can walk to Fenway Park, Copley Place, the Back Bay shopping district, and a number of internationally renowned hospitals and research and teaching centers. In 1910, the University began construction on the first piece of land acquired at its present site; it now covers more than fifty-five acres.

To reach increasing numbers of students and to make participation in our programs as convenient as possible for you, Northeastern University has established suburban campuses and branch locations, as well as several off-campus athletic facilities. The campuses and branch locations house administrative and classroom facilities for Northeastern's graduate, part-time day and evening, and continuing education programs. The University also maintains many affiliations to ensure access to facilities and specialized equipment available at other institutions

and organizations.

The Dedham campus, just north of Route 128, houses the Center for Continuing Education and provides space for the College of Business Administration's High Technology MBA and Executive MBA programs and the Center for Manage-

ment Development's Management Workshops.

Near the junction of Routes 128 and 3 in Burlington is the Suburban Campus of Northeastern University. Part-time undergraduate courses in a variety of subject areas and part-time graduate courses in engineering and business administration are offered here. The Burlington campus also offers special programs for part-time, evening, and noncredit continuing education courses.

Located near the Burlington campus, the Botanical Research Station in Woburn contains a small arboretum and a spacious greenhouse for propagation

and research.

The Warren Conference Center is a multi-purpose year-round conference center located on 165 acres of wooded, lakeside land twenty-five miles west of Boston. The newly renovated lodge offers meeting space for groups of up to 150 people. Overnight group retreats and special events can be held at the center. Recreational activities including tennis, swimming, volleyball, and soccer grace the open fields and are available to conferencing groups. For information and rates for day and residential meetings and social events please contact the Warren Conference Center directly at 508-881-1142.

Twenty miles northeast of Boston, the Marine Science and Maritime Studies Center is located in Nahant, on Massachusetts Bay. It serves as a site for national,

international, and University research.

Henderson House, Northeastern University's conference center, is located twelve miles from Boston in suburban Weston. This facility hosts a variety of activities, including residential seminars, workshops, short courses, and weekend meetings.

University Libraries

Together, the collections, services, staff, and facilities of the Northeastern University Libraries provide access to information and an understanding of the organization of the literature and other information resources of the academic disciplines. The library is integral to the academic and research processes, whether these occur in a formal classroom, seminar, or laboratory setting or through individual study and enrichment.

All part-time students have full access to all units of the University Libraries located on the Boston and Burlington campuses and at the Marine Science Center

in Nahant.

Total holdings of the University Libraries include more than 770,000 volumes, 1,750,000 microforms, current subscriptions to over 8,700 serials and newspapers, 160,000 government documents, and 14,000 audio, video, and computer software titles.

Snell Library, a centralized library for the Boston campus, is open more than 100 hours each week that classes are in session. It has 2,800 seats on five levels and shelving for more than 1.25 million volumes. Library services incorporate online, telecommunication, and media technologies that are associated with information resources, including an online catalog and circulation system, microcomputer and language laboratories, specialized equipment for users with disabilities, a media center, and a CD-ROM optical disc network.

The Burlington Campus Library's collection serves courses taught at that campus. The online catalog as well as CD-ROM databases are available, and materials from the Snell Library collections can be requested at and delivered to

Burlington.

Library staff are available in all service areas to assist students, including students with disabilities. Librarians provide instruction to groups and to individuals on the bibliographic research process and on strategies for identifying, locating, and using information resources. Each term, a series of tutorials is offered giving students further opportunities to meet with a librarian to discuss

particular or specialized research needs.

Northeastern University is a member of the Boston Library Consortium, a cooperative arrangement among the following academic and research institutions: Boston College, Boston Public Library, Boston University, Brandeis University, Marine Biological Laboratory/Woods Hole Oceanographic Institution, Massachusetts Institute of Technology, Northeastern University, State Library of Massachusetts, Tufts University, University of Massachusetts (Amherst, Boston, Dartmouth, and Lowell campuses), and Wellesley College. The University's membership in the Boston Library Consortium generally allows for on-site use by, but does not grant borrowing privileges to, students at Northeastern. Some of the consortium libraries and many of the other libraries in the Boston area require that a visiting student present a special pass or letter of introduction. A Northeastern reference librarian can advise about such student visitor policies.

Division of Academic Computing

The Division of Academic Computing (DAC) facilitates the use of computers by Northeastern students and members of the faculty. Some years ago that meant maintaining one good-sized computer, used primarily by those doing advanced work in engineering, mathematics, or the physical or biological sciences. More recently, computing has found productive use in nearly every field of study pursued at the University. At the same time, computing activities have increasingly migrated to personal computers, altering the nature of the need for computing services. DAC is committed to meeting these new challenges while continuing

to support the traditional, computationally intensive uses of computing.

DAC's Personal Computing Initiative supports personal computing with negotiated discounts on hardware and software. Written information is available about this in 39 Richards Hall. Through advice, training, and assistance on personal computer use, the intent of the initiative is to provide an environment as hospitable and supportive as possible to the personal mode of computing, including the ability to connect personal computers to university computing systems. DAC maintains the lynx communication system for the exchange of computer mail and conference discussions. Computer mail can also be exchanged with users at any of the several thousand computers at other institutions. Participation in lynx is available to any member of the Northeastern community and is free. To sign up for a lynx account, bring a valid Northeastern I.D. to 39 Richards Hall during business hours.

The Division of Academic Computing also maintains mainframe computing resources, most notably the VAXCluster Systems, and the numerous public-access labs of personal computers and terminals on the Boston, Dedham, Burlington, and Liberty Square campuses. An advanced high-speed network connects the university's computing facilities and links them to other computers at locations around the world. ACCESS, the newsletter of the division, appears seven times a year and includes the locations and facilities of the labs and news about other DAC services and facilities.

Research

Research and scholarship are integral parts of Northeastern University's commitment to the intellectual growth and academic achievement of its students. Research activities span almost every academic field and include laboratory projects, theoretical studies, and technological applications.

Funding for research comes from government agencies, foundations, corporations, and the University itself. In recent years such industrial firms as Beckman, General Electric, Digital, and Lockheed have supported Northeastern's research programs. Currently, external grants and contracts exceed \$27.5 million annually.

Northeastern's faculty numbers among its ranks some of the most distinguished scholars in their fields, and many have received such prestigious awards as Sloan Scholarships, Guggenheim Fellowships, National Institutes of Health Research Awards, Fulbright Scholarships, and a MacArthur Foundation grant. Faculty members lecture the world over, serve as consultants to industry and government agencies, participate on a variety of national and international committees, and are quoted frequently in the regional and national press on a wide range of subjects.

Programs at Northeastern

Undergraduate Colleges

Bouvé College of Pharmacy and Health Sciences

Offers five-year, cooperative education program leading to the Bachelor of Science in Pharmacy, Respiratory Therapy, Toxicology, Physical Therapy, and to the Bachelor of Science with majors in medical laboratory science, cardiovascular health and fitness, and athletic training. A non-cooperative four-year baccalaureate program is offered in dental hygiene. Associate's degree programs are offered in medical laboratory science and dental hygiene. The College also offers post-baccalaureate certificate programs for physician assistants (the PA option is a 2-year full- or part-time program with the option of a Master of Health Professions), respiratory therapy, cardiovascular technology, perfusion technology, and medical laboratory science (concentrations in blood banking, clinical chemistry, hematology, immunology, and microbiology). For information, all 617-373-3320.

College of Arts and Sciences

Offers programs in the visual and performing arts, humanities, journalism, social sciences, physical and natural sciences, and mathematics leading to the Bachelor of Arts and Bachelor of Science degrees. Programs are normally four years in length on a full-time plan or five years in length on the cooperative plan. For more information, call 617-373-2200.

College of Business Administration

Offers four- and five-year, cooperative education programs leading to the Bachelor of Science in Business Administration and a five-year, cooperative education program leading to the Bachelor of Science in International Business. Students complete a concentration in accounting, human resources management, marketing, finance and insurance, management, international business administration, entrepreneurship and small business management, management information systems or logistics and transportation. For more information, call 617-373-2200.

College of Computer Science

Offers a five-year and a four-year cooperative education program leading to the Bachelor of Arts in Computer Science, and the Bachelor of Science in Computer Science, with emphasis tracks in database management, languages, and operating systems. Other electives include parallel processing, graphics, distributed computing, and artificial intelligence. Research opportunities are available to advanced students. For more information, call 617-373-2462.

College of Criminal Justice

Offers a five-year, cooperative education program leading to the Bachelor of Science degree. For more information, call 617-373-3327.

College of Engineering

Offers four- and five-year cooperative education programs in chemical, civil, electrical (including a power systems option and a computer engineering option), industrial, and mechanical engineering leading to the Bachelor of Science with specification according to the department. These programs are accredited by the

Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. A more general program leading to the Bachelor of Science without specification is also offered. For highly qualified students, the electrical and computer engineering, mechanical engineering, and industrial engineering and information systems departments offer five-year programs leading to the bachelor's and the master's degrees; students generally carry five courses per quarter and forego one cooperative work quarter to complete the program. The College also offers a six-year, accredited, part-time evening program leading to the Bachelor of Science degree in civil, electrical, or mechanical engineering. For more information, call 617-373-2154.

College of Nursing

Offers five-year, cooperative education program leading to the Bachelor of Science in Nursing. The College welcomes transfer students who have a degree in another field or who have completed a minimum of 45 quarter hours of credit including *Anatomy and Physiology 1* and 2 to enter the 2 year, 9 month accelerated track. The College also offers an R.N. to B.S.N. option to registered nurses who wish to pursue a baccalaureate degree in nursing. The R.N. to B.S.N. option is offered for full-time day students by the College of Nursing and for students desiring part-time evening study in collaboration with Northeastern University's part-time unit, University College. For more information call 617-373-3610.

School of Engineering Technology

The School of Engineering Technology, a division of the College of Engineering, offers programs leading to the Associate in Engineering, Associate in Science, and Bachelor of Science in Engineering Technology on both a full-time and parttime basis. A full-time, five-year cooperative education plan is offered, at the baccalaureate level, in electrical and mechanical engineering technology and computer technology. A full-time, three-year cooperative education plan is offered, at the baccalaureate level, for transfer students in Aerospace-Maintenance Engineering Technology. In addition, part-time evening and weekend programs are available at the associate level in Computer Technology, Telecommunications, and Electrical, Environmental, Manufacturing, Mechanical, Structural, and Surveying and Highway Engineering Technology. Part-time evening and weekend programs are available at the baccalaureate level in Computer Technology, Electrical, Manufacturing, Mechanical and Mechanical-Structural Engineering Technology. A part-time baccalaureate degree is also available, for transfer students, in Aerospace-Maintenance Engineering Technology. A C/C++/UNIX Specialist certificate program is available on a part-time basis as well. Many of the part-time and weekend technology courses are televised via Network Northeastern to satellite campuses and company sites. For more information, call 617-373-2500.

Graduate Schools

Bouvé College of Pharmacy and Health Sciences

Offers programs leading to the Master of Science degree in general biomedical science, hospital pharmacy, medical laboratory science, medicinal chemistry, pharmacology, toxicology, clinical exercise physiology, counseling psychology, rehabilitation counseling, and speech-language pathology and audiology, human resource counseling, applied behavior analysis, college student development and counseling, applied educational psychology with specialties in school counseling and school psychology, a Master of Science in Education (intensive special needs), and a Master of Science in Education (special needs). The Master of Health Profes-

sions is offered with four options: general, health policy, physician assistant, and regulatory toxicology. The Certificate of Advanced Graduate Study may be earned in counseling psychology, rehabilitation counseling, school psychology, or human services specialist. A *Doctor of Philosophy degree* is offered in biomedical science with specializations in medical laboratory science, medicinal chemistry, pharmaceutics, pharmacology, or toxicology. A graduate program in clinical pharmacy, leading to the Doctor of Pharmacy, is also available. The Doctor of Education degree is offered in counseling psychology and school psychology. For more information, call 617-373-3380.

College of Arts and Sciences

Offers programs leading to the Master of Arts degree in economics, English, history, journalism, political science, sociology, social anthropology, and writing. The Master of Science degree is available in biology; chemistry; economic policy and planning; law, policy, and society; mathematics; and physics. The Master of Technical and Professional Writing, the Master of Public Administration, and the Master of Education degrees are also offered. In addition, there are programs leading to the Certificate of Advanced Graduate Study in advanced literary study and to the Doctor of Philosophy degree in biology; chemistry; economics; English; history; law, policy, and society; mathematics; physics; psychology; and sociology. There are also non-degree certificate programs in elementary and secondary teacher certification, in writing and in technical writing. Most programs may be completed through either full- or part-time study. For more information, call 617-373-3982 to be referred to the department of interest.

College of Business Administration

Offers five programs leading to the Master of Business Administration (MBA) degree. Options include a Cooperative Education MBA program, a full-time MBA program, and a part-time MBA program. An Executive MBA program tailored to the needs of experienced managers and a High-Technology MBA program designed for professionals in the high technology community are also offered on a part-time basis. Additionally, a nondegree program leading to the Certificate of Advanced Study is available. For more information, call 617-373-2714.

The Graduate School of Professional Accounting offers a unique fifteen month comprehensive MS/MBA degree program specifically designed for the liberal arts and sciences graduate. The program features a three-month paid internship with a major CPA firm and achieves virtually 100% placement for its students upon

graduation.

The GSPA also offers a Master of Science in Taxation Program (MST) on a part-time basis for those already qualified in the accounting or business fields seeking to become tax or personal financial planning specialists. It is a small,

selective program regarded as the qualitative leader in tax education.

The GSPA has also recently developed a specialized advanced degree in finance. The Master of Science in Finance (MSF) Program is also a post-professional degree offered primarily on a part-time basis to those looking to advance their careers in finance, banking, financial service or investments. Both the MSF and the MST are offered not only on the main campus but also in the newly reestablished downtown campus in the heart of the financial district. Information on all GSPA programs can be obtained by calling 617-373-3244.

The Office of Executive Education offers executive-level management programs custom-designed to meet the specific needs, concerns and interests of individual companies. Program faculty and administrative staff work together with key company executives to develop programs designed to focus on both current needs and long range company goals. Curricula are designed to help experienced managers improve their immediate effectiveness and realize their full potential as leaders in their organization. For more information, call 617-373-3272.

College of Computer Science

Offers full-time and part-time programs leading to the Master of Science in Computer Science with concentrations in artificial intelligence, communications and networks, databases, operating systems, programming languages, graphics and image processing, and theory. The Doctor of Philosophy program includes theory, artificial intelligence, data-base management, parallel distributed computing, programming languages, and systems. For more information, call 617-373-2464.

College of Criminal Justice

Offers both full-time and part-time study leading to the Master of Science in Criminal Justice. A full-time program normally takes one full year for completion. While students are encouraged to tailor their program to meet their own educational and career objectives, the curriculum offers specialization in Justice Administration, Criminology, Juvenile Justice, Security Administration, and Research. For more information, call (617) 373-3327.

College of Engineering

Offers full-time and part-time programs leading to the Master of Science in chemical engineering, civil engineering, computer systems engineering, electrical engineering, engineering management, industrial engineering, information systems, and mechanical engineering. The engineer degree is available in the departments of electrical and computer engineering, industrial engineering and information systems, and mechanical engineering. A five-year program leading to both a Bachelor and a Master of Science degree is offered in electrical, industrial, and mechanical engineering. The Doctor of Philosophy degree is offered in chemical engineering, civil engineering, electrical engineering, industrial engineering and mechanical engineering. An interdisciplinary Doctor of Philosophy is available for graduate students whose interests overlap two or more departments. Women in Engineering and Women in Information Systems programs are also available. For more information call 617-373-2711.

College of Nursing

Offers a full-time and part-time Master of Science in Nursing program. The master of science degree may be earned with a specialization in Nursing Administration, Community Health Nursing, Critical Care Nursing, Nurse Anesthesia, Primary Care Nursing (Nurse Practitioner) or Psychiatric-Mental Health Nursing. A RN to MS program leading to both Bachelor and Master's degrees is available to experienced registered nurses with a nursing diploma or associate degree. Also, Master's prepared nurses may study for the nurse practitioner role in the Certificate of Advanced Study program. For more information, call 617-373-3125.

School of Law

Offers a full-time day program leading to the juris doctor degree. The three-year curriculum includes four quarters of work experience in various legal settings including judges' chambers, law firms and governmental agencies. Concurrent degree programs for the M.B.A., M.S. in accounting and Ph.D. in Law, Policy and Society are available. For more information, call 617-373-2395.

Division of Continuing Education

Northeastern University established continuing education programs over thirty years ago to provide a practical, high quality career-related education in business and industry consistent with the University's tradition of adult education. The mission of the division is to be a leader in nondegreed continuing education for the career professional. Courses are taught primarily by practitioners in their respective fields. Program development, courses, and seminars are based on market needs and wants and are offered at convenient off-campus locations and at company sites. The division continues to enhance Northeastern University's regional and national reputation as a leader in continuing education via such technological advances as microwave and satellite transmission. For further information on the programs, telephone the division office at 617-373-5828.

On-Site Corporate Training (NON-CREDIT)

The Division of Continuing Education through its Corporate Education Services department offers complete corporate training, able to bring individual courses, series, or certificates on-site to groups of ten or more. For information, telephone 617-320-8000, ext. 8051.

Northeastern University Center for Family Business

Northeastern University's Center for Family Business is a membership based program offering seminars and highly interactive round table workshops to family owned businesses. Programs focus on a variety of topics from leadership succession and ownership transfer to conflict resolution around issues of power, control, and money. Constituent groups, such as a Leadership Development Forum, and a Seniors' and Women's Forum, for younger generation members complement the core program. Continuing education is also offered to non-members on a select basis and to professionals serving family businesses. For further information, telephone 617-320-8000, ext. 8015.

State-of-the-Art Program

The State-of-the-Art Program offers evening, day, and Saturday courses, seminars, and on-site training designed for working professionals seeking practical, hands-on education in a work-related area of technology. The curriculum includes courses and certificate programs in high-level computer languages, data communications, biotechnology, computerized automation technology, telecommunications, microelectronics/semiconductor science, microwave engineering technology, artificial intelligence, assurance technology, software engineering, and technology management. For further information, telephone the State-of-the-Art Program at 617-320-8000, ext 8052.

Building Design and Management Program

Designed for a broad spectrum of professionals either presently in or considering some aspect of the building and construction technologies. Evening courses, on-site training, and seminars include architecture, facilities management, real estate inspections, landscape management, construction law, fire protection systems, license examination preparation, and specialty courses for professional engineers. Certificate programs are offered in building and construction technology, facilities management, construction superintendent, HVAC systems design, advanced HVAC systems management, land surveying, fire protection systems, real estate inspections, and construction management. For further information, telephone 618-320-8000, ext. 8026.

Environmental and Regulatory Management Program

This program covers the essentials of regulation, evaluation, assessment, and management techniques in today's environmental industry. Evening courses, custom on-site corporate training, and seminars are offered which explore compliance management; risk assessment; solid and hazardous waste management; occupational health and safety procedures; site investigation and remediation. Certificates of Professional Achievement are offered in environmental hazardous waste management, solid waste management and occupational health and safety. For further information, telephone 617-320-8000, ext. 8026.

Paralegal Professional Program

The Paralegal Certificate Program offers an intensive 12-week training course designed to give participants hands-on practical paralegal training. The Specialist Courses and Workshops offer training on specific legal topics such as legal research/writing, real estate, family law, litigation, and labor law. Pre-law School Studies offers an LSAT review course, a study techniques course, and a law school preview course. For further information, telephone 617-320-8000, ext. 8047.

Test Preparation Program

The Test Preparation Program offers courses to help prepare for the LSAT, GMAT, GRE, and new SAT 1 examinations, providing the participant with an indepth exposure to the subject matter. For further information, telephone 617-320-8000, ext. 8047.

Insurance and Financial Services Institute

Established to foster excellence in the insurance and financial services communities in the Boston area, the institute offers courses and seminars in general insurance, risk management, insurance licensing, securities registration, and financial planning. These study programs assist those seeking to develop or to update professional credentials. For further information, telephone 617-320-8000, ext. 8021.

Network Northeastern

Network Northeastern utilizes the microwave-based Instructional Television Fixed Service (ITFS) system to broadcast courses to over 30 local companies and to the Burlington and Dedham campuses. Live classroom instruction is telecast to remote sites where students interact with their instructor via a telephone-based talkback system. A courier service is provided to collect and deliver course materials and to serve as the off-campus student's link to academic and administrative departments at the Boston campus.

Courses are offered in graduate engineering, graduate computer science, undergraduate engineering technology, and noncredit seiminars for professional development. Network Northeastern also delivers graduate level and short

courses to corporations throughout the United States via satellite.

Faculty

*Denotes senior lecturer as of October 1994.

Debra Aarons, M.A. American Sign Language **Boston University** Barbara Abeles, M.B.A. Management Abeles Associates Kimiko Abramoff, M.A. Modern Language Hon. Herbert Abrams, M.L.* Criminal Justice and Security Superior Court of Massachusetts Michael J. Abruzzese, M.B.A.* Information Systems Primerica Financial Services Deborah A. Adair, M.S.* Health Information Administration Elliott Hospital John Adams, Ph.D. Economics Northeastern University Thomas J. Ahern, Jr., J.D.* Business Law Silver and Ahern Joseph Aieta III, M.A.* History Lasell College Nicholas J. Aieta History Peter J. Al-Achi, M.S. Biology Northeastern University Edward E. Alessi, M.A. Sociology | Anthropology Bedford VA Hospital Alan Alford, M.B.A. Finance Northeastern University Jill A. Alexander, M.A. English ARCD Fabria Aliloo, M.S. Information Systems Patricia L. Alves, B.S. Hotel & Restaurant Management Katharine Gibbs Susan A. Alves, M.A. English Northeastern University Janis L. Anderson, Ph.D. Psychology Brigham & Women's Hospital Rae Andre, Ph.D. Human Resources Management Northeastern University Clarice Andrews, M.S. Nursing Robert B. Angus, M.S.* Mathematics Angus Associates Stanley S. Antoniotti, M.A* Economics Bridgewater State College Robert J. Anzenberger, M.P.A.*

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Philosophy/Religion

Security

Westin Hotel

Dean Junior College

Mark H. Beaudry, M.S.

Francis J. Bedard, J.D. Accounting Deloitte & Touche Judith A. Bednarz, M.S. Technical Communications Candela Laser Corporation Stanley A. Beecoff, M.B.A.* Management Self-employed Roger Beer, M.S.* Information Systems Digital Equipment Corp. Thomas M. Begley, Ph.D. Human Resources Management Richard E. Belanger, B.S.* Management Digital Equipment Corporation Susan B. Belinsky, M.P.A. Health Management Laboure College Ralph C. Belmonte, Ed.D.* Speech Communication Edward Bembery, M.Ed. Alternative Freshman/Language Skills John Bena, J.D. Real Estate MacDonald, Wallace and Rowley, PA Patricia Bench, M.Ed. Alternative Freshman/Mathematics Margaret L. Bendroth, Ph.D. History/Philosophy/Religion Richard F. Benedetto, M.A.* Alternative Freshman/Management Self-employed Moshe Ben-Horim, Ph.D. Finance Northeastern University Mitchell J. Benoff, B.A. Music Berklee College of Music Maria F. Benotti, M.A. Music New England Conservatory Extension Samuel J. Bernstein, Ph.D.* English Northeastern University Alfred J. Bevington, B.S. Marketing BULL HN Information Systems Gaurab Bhardwaj, B.S. Management Sciences Henry M. J. Biagi, M.A.* Hotel & Restaurant Management City of Somerville Lesley Bicanovsky, M.S. Biology Northeastern University Stephen P. Bishop, M.B.A. Finance Robertson Ceco Corp. Carl Blackman, M.B.A.* Accounting Carl Blackman & Co. Christopher Blackburn, Ph.D. Chemistry Covalent Associates

Human Resources Management

Charmarie J. Blaisdell, Ph.D.* History Northeastern University Barbara Blakeslee, M.A.T. Human Resources Management Massachusetts Department of Revenue Spencer Blakeslee, M.A. Human Resources Management/ Sociology Robert J. Blanch, Ph.D.* English Northeastern University Theodore Blank, Ed.D. Health Science Lawrence J. Blumsack, M.S. Drama Presentations, Inc. Janet L. Bobcean, M.F.A. Drama Northeastern University Kathleen Bobick, B.S. Therapeutic Recreation **Tufts University** Stephen M. Boczanowski, M.S. Art Marshfield High School Paul J. Bolster, Ph.D. Finance Northeastern University Jay Borkland, M.A. Earth Science Goldbergzoino & Associates Jeffrey Born, Ph.D. Finance Northeastern University David Boston, M.Ed. Earth Science Wellesley High School Charles R. Botticelli, Ph.D.* Biology Guy E. Bottiglio, M.S.* Information Systems Interactive Business Systems Jean Paul Boucher, M.A. Human Resources Management Digital Equipment Corporation Mark S. Bourbeau, J.D. Real Estate Alma Bournazian, B.A. American Sign Language Theodore R. Bousquet, B.S* Information Systems John F. Bowes, Jr., M.B.A.* Information Systems **MBTA** Elizabeth Powers Bowling, M.A. Information Systems Lotus Development Corp. David Boyd, Ph.D. Human Resources Management Northeastern University Robert T. Boyd, M.S. Mathematics Town of Winchester Richard W. Boyden, B.S.* Information Systems Self-Employed Donald J. Boyle, M.B.A. Marketing

Thomas P. Brady, Jr., M.B.A.*

Thomas P. Brady C.P.A.

History

Northeastern University

Council

Accounting

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Speech Communication

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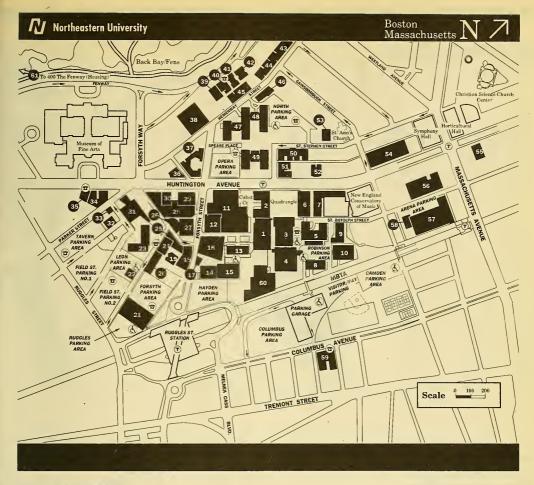
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Academic and Service Buildings

African-American Institute (AF) 7 22 12 Borletta Natatorium (BN) 19 **Boiler Plant** 54 Cabot Physical Education Building (CB) TTY: Rm 110
Cahners Hall (CA) TTY: Rm 151 11 10 39 Cargill Hall (CG) 28 26 Churchill Holl (CH) 41 13 59 Columbus Place 29 (716 Columbus Avenue) (CP) 25 56 Cotting School (CT) 57 Cullinane Hall (CN) - 58 9 40 Cushing Hall (CU) 20 14 Oone Research Center (DA) 27 Dockser Holl (DK) TTY: Rm 107
 Oodge Building (DB)
 18

 Ell Student Building (Audinorium) (EL) TTY: Rms 04,104
 31

 Ell Student Enter (Student Lounge) (EC) TTY: Rm 2SS
 2

 Forsyth Building (RR) TTY: Rms 100, 135
 0
 6 3 4 16 Forsyth Building Annex (FA)
Forsyth Dental Building (FE)
Hayden Hall (HA) TTY: Rms 120, 202 17 21 38 15 1 60 33 Hillel-Frager (HF) Holmes Hall (HO) TTY: Rm 276 50 24 30 236 Huntington Avenue (HU)

Hurtig Hall (HT) Koriotis Hall (KA) Kerr Holl (Faculty Center) (KH) Knowles Center (KN) Lake Hall (LA) TTY: Rm 203 Matthews Areno (MA)
Matthews Areno Annex (MX) Meserve Hall (ME) TTY: Rm 305 Mugar Life Science Building (Peabady Health Professions Center) (MU) Nightingole Holl (NI) TTY: Rm 12S Porker Building (PA) Richards Holl (RI) TTY: Rms 150, 254 Rabinson Hall (RB) Ryder Hall (RY) TTY: Rms 170, 180, 251, 270 Snell Engineering Center (SH) TTY: Rm 120 Snell Librory (SL) TTY: Reference Desk 122 St. Stephen Street (SS) Steorns Center (ST) TTY: Rm 302 26 Tovern Road (TA)

316 Huntington Avenue

Huntington Plaza

(Northeostern at the YMCA) (BY)

(271 Huntington Avenue) (HN)

for TTV locations.

Key Academic, residential, and service buildings (4) (4) Handicop parking Parking areas Street direction Underground tunnel Emergency telephone TTY: Rm 000 TTY lacations See alphabetic list of buildings

Maps are provided by the Information Center, 115 Richards Hall, extension 2736 (TTY extension 3768). Some buildings on this map are used but not owned by Northeastern University. 6/91

Residence Buildings

Light Hall

53

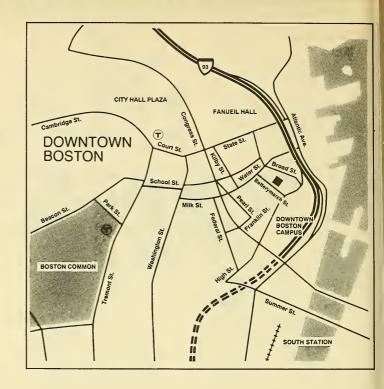
34 Burstein Hall 43 Kennedy Hall 142-148 Hemenway Street 46 153/157-163 Hemenway Street 45 316 Huntington Avenue (Northeostern of the YMCA) 52 319 Huntington Avenue 337 Huntington Avenue 51 36 407 Huntington Avenue 41 Kerr Holl

Melvin Holl 35 Ruhenstein Hall Smith Holl 44 49 Speare Hall 48 Statson East TTY (public) Stetson West 106/110/116/122 St. Stephen Street 47 50 23 Willis Holl 37 400 The Fenway

Boston Downtown Campus

Batterymarch Building 89 Broad Street

Take MBTA to State Street. Exit at Old State House. Walk down State St., cross Congress St. to Broad St. Take right on Broad St. to 89 Broad St.



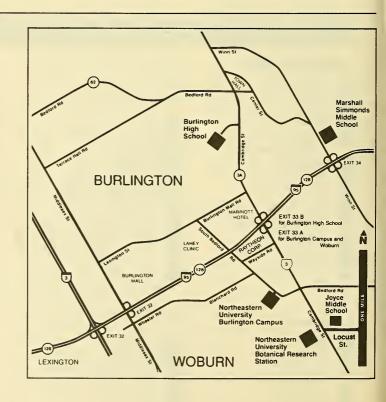
Burlington Campus South Bedford Road Burlington High School 123 Cambridge Street

Burlington Campus

From 128 North or South, take Exit 33A and follow to South Bedford Street. Take right at lights and go 3/10ths mile to university entrance on your left.

Burlington High School

From Rte. 128 South to exit 33B (Rte. 3A). Take right at end of exit ramp. Approx. 1/4 mile to Football Stadium on left. Take left at lights.
From Rte. 128 North to Exit 33B (Rte. 3A). At end of exit follow approx. 1/4 mile to Football Stadium on left and second set of lights. Take left at lights.

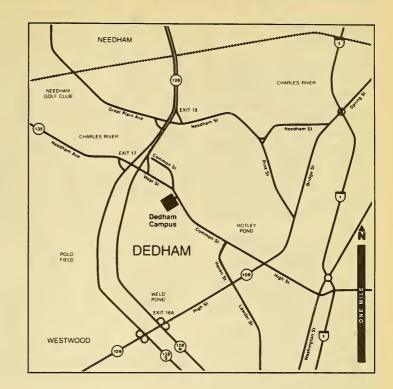


Dedham Campus

370 Common Street

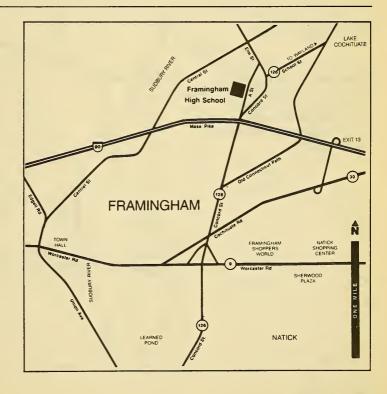
From Rte. 128 South, take Rte. 135 Exit. Turn right at end of ramp and follow Common St. to campus on the right.

From Rte. 128 North, take Route 135 exit. Turn left at end of ramp and follow Common St. to campus.



Framingham High School A Street

From Mass Pike going West, take Rte. 30 exit. Bear right after toll booth and take Rte. 30 West to Rte. 126 (Concord St.). Take right onto Rte. 126. Go under Mass. Pike to A Street (left at fork). High School on left.



Malden High School 77 Salem Street

From the North - Take Main Street to Malden Sq. Take a left onto Salem St. at lights. High School is on the right across from the Public Library.

From the East - Take Rt 60 West from Broadway, Malden to Main St. At lights take a right onto Main St. through Malden Sq. At second set of lights take a right onto Salem St. High School is on right across from the Public Library.

From the West - Take Fellsway East to Rt 60 East to Main St.
Take a left at Main St. through Malden Sq. At second set of lights take a right onto Salem St. High School is on the right across from the Public Library.

From the South - Take Main St. from Everett Rt 60. At second set of lights from Rt 60, go through Malden Sq.; take a right onto Salem St. High School is on right across from the Public Library.



Marlboro High School

Bolton Street

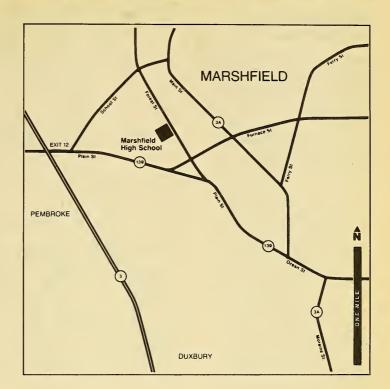
From Rte. 495 North to Exit 25, Rte. 290 Ext. Take exit and follow Rte. 290 Ext. to Rte. 85. Take right on Rte. 85 (Bolton St.) to Navin Skating Rink. Make first left after rink. High School is on left.



Marshfield High School

Forest Street

From Route 3, going North or South, take exit 12 and follow School St. to Forest St. Take a right onto Forest St. and the high school is located on the right just before you reach Furnace St.



Milford High School

31 West Fountain Street

- 1. From Mass Pike and Rte. 9 to 495 South, Exit 20 to Cedar St. to Dilla St. to Purchase St. to Fountain St. to West Fountain St. to Milford High School.
- 2. From Rte. 140 past Milford Hospital. Go 1 mile; pass Shaw's Supermarket and Hills Shopping Plaza. Take right at island and proceed across West St. to Highland St., 3/4 mile to overhead blinking light. Take right onto West Fountain St. to High School.
- 3. From Rte. 109 to intersection with Rte. 16. Proceed through Milford (approx. 3 miles to Milford Hospital and Rte. 140). Take right at Milford Hospital and proceed as in step #2.

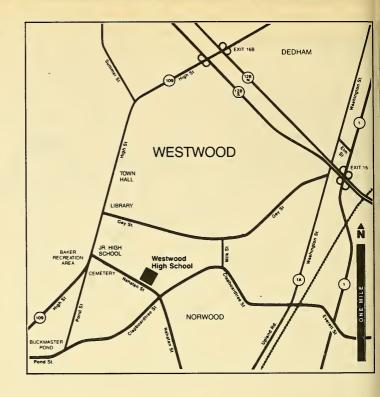


Westwood High School

200 Nahatan Street

From Rte. 128 North take Rte. 109 Exit. Go west after exit on Rte. 109 to Nahatan St. on left. Take Nahatan St. to high school on left.

From Rte. 128 South take Rte. 109 Exit. Follow above directions on Rte. 109.



Weymouth Junior High School 360 Pleasant Street

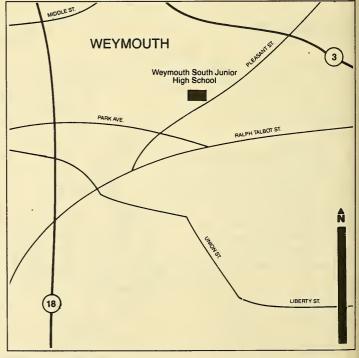
360 Pleasant Street From Rte. 3 Headin

From Rte. 3 Heading North. Take exit 16. At top of ramp take a left. Go up hill and continue through traffic lights. At next set of lights, turn left. Turn left again at next set of lights. South Junior High School is the second school you will see on your left.

From Rte. 3 Heading South. Take exit 16B. Proceed through traffic lights at top of hill. Take a left at next set of traffic lights. At next set of traffic lights turn left. South Junior High School is the second school on your left.

From Rte. 18 Heading North. Continue past Pleasant Shops and South Shore Hospital (both on your right). Take a right at the first set of traffic lights after the South Shore Hospital. At next set of traffic

lights turn left. South Junior High School is the second school you will see on your left.



Index

Program, 152-154

Alumni association, 275

Absence, 16 certificates, 41, 60 Health Sciences, 280, 281 courses, 163-165 Academic advising, 8 BSBA degree program, 70-74 program consultant, 127 **Building Design and Management** Academic and Student Affairs, Anatomy courses, 166 Office of, 8, 38 Program, 284 Anthropology Academic calendar, 3-5 Burlington High School/Suburban courses, 255-256 Campus degrees,149-150 Academic Computing, 278-279 map of, 306 program consultants, 127 office hours, 13 Academic counseling, 8-9 APICS, 61 registration at, 3-5 Academic and life skills Bursar's Office, 264 development workshops, 11 courses, 157-163 Business Administration: see also Academic integrity, 19 program consultants, 127 Management Academic monitoring, 19 Arts and Sciences: see also associate in science in, 76 Liberal Arts bachelor of science in, 89 Academic policies and College of, 280, 282 certificate program, 42 procedures, 15-20 College of, 280, 282 degree, 130 Academic probation, 22 track, in Alternative Curriculum Committee, 301 Freshman-Year Program, degree programs, 67-94 Academic programs: see Programs graduate program, 74 of study master of, 282 ASL: see American Sign minor in, 129 Academic Standing Committee, Language (ASL) 19, 301 program consultants, 67 reserved/open sections, 72-73 Assessment of Prior Learning Accounting (APL), 28-29, 130 track, in Alternative Freshmancertificate, 40 Year Program, 153 certificate, advanced, 58 Astronomy courses, 196 validation requirement for, 72 courses, 156-157 Athletic facilities, 275 Business communication, 42 degrees, 75, 85 Graduate School of Attendance Business law Professional, 282 of classes, 16 courses, 169-170 for hospitality industry, 213 at graduation, 34 program consultant in, 67 program consultants, 67 Auditing Accreditation, 70, 125, 318 C courses on, 157 policy for, 16 Calendar, 3-5 Acting courses, 181-182 of seniors, 34 certificate, 41 Campuses, Awards, 274 facilities, 12 Address change, 16 maps, 305-310 Administrative officers, 300 В office hours, 13-14 registration at, 3-5 Bachelor of Science in Business Admissions to degree program, 15 Administration degrees, 70 Cancellation, of courses, 16, 319 of international students, 17 special requirements, 72 Cardiovascular health and open enrollment policy on, 15 **Biological Science** exercise course, 235 Adolescent Care, 50 courses, 166-169 Career counseling and testing degree, 108 Advanced Tutorial, 25 service, 9-11 program consultant and coordinator, 105 Advertising Career development/placement certificate, 41 courses, 9, 170-171 Biotechnology courses, 215 degrees, 110-111 Career Expos, 10 program consultant, 127 program consultant, 105 Career Resource Center, 10 Advising, academic, 8 Boston Library Consortium, 278 Career transition programs, 38 African-American Studies, 157 Boston Main Campus Center for family business, 284 map of, 305 Allied health: see Health office hours, 13 Professions and Sciences Certificate petition, 38 registration at, 3-5 Alternative Freshman-Year

Botanical Research Station, 277

American Sign Language (ASL)

Bouvé College of Pharmacy and

Certificate programs, 38-60 accounting, 40 accounting, advanced, 58 acting, 40 adolescent care, 50 advertising, 41 American Sign Language and Deaf Studies, 41 American Sign Language-English Interpreting, 60 business administration, 42 business communication, 42 communication studies, 43 compensation and benefits management, 43 computer crime and security, 43 computer graphic design, 44 computer programming and software development, 44 computer programming and systems analysis, 45 computer systems specialist, 46 corporate travel management, electronic composition, 47 environmental science, adv., 59 environmental studies, 48 finance, 48 food service management, 49 gerontology, 49 graphic design/visual com., 49 health info. admin., 114 hotel and restaurant management, 50 human development, 50-51 human resources mgt., 51 infant/child care, 51 intermediate and advanced, 58-60 international bus. & culture, 51 legal studies, 52 management, 52 marketing, 53 microcomputer software, 53 operations management, 53 paramedic, 124 personal financial planning, 54 public relations, 54 purchasing and materials management, 55 small business, 55 technical writing, 56 transportation and physical distribution management, 56 UNIX for business, 57 within degree programs, 23 writing, 57

Certification preparation, 38, 61-66

Cheating, 19

Chemistry courses, 172-173 program consultant and coordinator, 105 Cinema courses, 160, 191, 193

Classes

attendance at, 16 cancellation of, 16, 319 size of, 7

CLEP examination, 27, 33, 72, 130

Clinical assignments, 106

Clubs, 275

Code of Student Conduct, 19-20

Commencement: see Graduation

Commencement Data Card, 34

Communications: see also Writing business, 42 for health care personnel, 202 speech, 43 technical, 56, 151, 260-262 visual, 44, 47, 49, 134-136, 157-163

Communications Studies certificate, 43 courses, 179-180

Community health management courses, 201-202 specialization in, 116

Compensation and benefits management, 43

Computer Crime & Security, 43

Computer graphic design, 44 courses in, 160-161

Computer literacy course, 180

Computer programming and software development, 44

Computer programming and systems analysis, 45

Computer Sci., College of, 280, 283

Computer services, 278

Computer Systems Specialist, 46

Conduct, Code of Student, 19-20

Conservation courses, 196

Consumer advocacy courses, 243

Contemporary studies, 214

Continuing care administration specialization, 116

Continuing Education, 284

Cooperative Plan of Education, 276

Copyediting, 192, 215, 260

Copying other students' work, 19

Corporate travel management, 46

Corrections consultants, 98 courses, 174-179 degree programs, 99-100

Counseling Center, 11

auditing of, 16

Counseling, Psychology Rehabilitation and Special Education course, 180

Counseling services, 8-11, 170-171

Courses

cancellation of, 16, 319 change in required, 16 description of, 155-263 duplication, 32 field work, 25 intensive, 7, 265 maximum number of, 18 at other institutions, 27 overload of, 18 pass/fail, 18, 31 prerequisite, 18 registration for, 3-5, 15, 264 at remote locations, 285 repeating, 32 reserved and open sections of, 72-73 schedule of, 15 selection of, 15-16

withdrawal from, 19, 30 Creative process course, 214

Creativity workshop, 214

Credential service, 10

sequential, 69

substitution of, 23

validation of, 26, 69

Credit

for bachelor of science in business administration, 26 for certificate programs, 38-39 by examination, 27, 33, 72 for extra-institutional learning, 29 for international students, 27 quarter-hour, 16 transfer, 26-29

Credit hours, 16

Criminal Justice and Security certificates, 43, 52 College of, 98, 280, 283 consultant, 98 courses, 174-179 Programs Committee, 301 programs in, 98-104 track, in Alternative Freshman-Year Program, 154

CTL, 61

Cultural heritage seminar, 214

Cumulative quality-point average, 31 Curricula: see Programs of study Curriculum committees, 301 D Dance facilities, 275 Data processing courses, 222-225 Dean's List, 24 Dedham Campus map of, 307 office hours, 13 registration at, 3-5 Default Policy, 265, 320 Degree programs, 67-151 for additional degree, 22 admission to, 21 in business administration, 67-94 certificates contained within, 23 in criminal justice and security, in health professions and sciences, 105-126 in liberal arts, 127-151 policies and procedures, 21-25 in technology, 95-97 transfer into, 26-29 Delivery of Services, 318

Dental school admission

requirements, 106-107 Departmental examination, 17, 18

Design, graphic certificate, 49 courses, 157-163 degree programs, 135-136 program consultants, 127

Disability Resource Center, 12, 319

Disciplinary action, 20 Disclaimers, 318-319

Downtown Boston Campus map of, 306 office hours, 13 registration at, 3-5

Drama courses, 181-182

E Earth Sciences courses, 194-197 program consultant, 105 **Ecology Courses, 167**

Economics courses, 182-186 degree programs, 131 program consultants, 127 Editing courses, 192, 215, 260

Education courses, 186-188 teacher prep. elementary/secondary, 64-65 health education, 66

Education track in Alternative Freshman-Year Program, 154

Educational-vocational counseling, 9-11

Electronic publishing composition, 47 courses, 161

Elementary Education, 64-65

Ell Student Center, 275 fee for, 266

Emergency Closing, 319

Emergency medical technician, EMT/basic program, 61 courses, 188

Employer, tuition payment by, 265

Engineering College of, 280, 283 State-of-the-Art Program, 284

Engineering Tech. School of, 281

English as a second language, 189 courses, 189-194 degree, 132, 133 placement tests, 18 program consultants, 127

Enrollment, 7, 15

Environmental Regulatory Mgt., 277

Environmental Studies certificate, 48 cert, advanced, 59

Epidemiology courses, 227

Equal Opportunity Policy, 320

Examinations CLEP, 27, 33, 72, 130 course, 17 credit by, 27, 33, 72 departmental, 69 final, 17, 31 makeup, 31 modern language proficiency, 28 PEP, 27, 33, 72, 130 placement, 18 Test Prep Program for, 285 for validation, 33

Executive Committee, 301

Exercise course, 235 facilities, 275 Extra-institutional learning, 29

F Facilities map, 305 Faculty, 286-299

Family Business, Center for, 284

Family Educational Rights and Privacy Act, 19, 320

Fees

Alternative Freshman-Year Program, 153 auditing, 264 intensive courses, 265 international transfer credit, 27 job notices, 10 laboratory, 266 late payment, 265 mandatory med. insurance, 266 missed final examination, 266 registration, 264 student center, 266 transcripts, 266 tuition, 264-265

Field work, 25

Film courses, 160, 191, 193

Final examinations dates for, 3-5 missed, 31, 266 policy for, 17

Finance certificate, 48 courses, 197-199 degree program, 77, 87 program consultants, 67

Financial aid, 267-268

Financial Services Institute, 285

Fine arts courses, 157-163 degree programs, 134

Food service management certificate program, 49 certification, 62 courses, 213-214 program consultant, 67

Framingham High School map of, 307 office hours, 13 registration at, 3-5

French courses, 216

Freshman-Year program, Alternative, 152-154

Friday intensives, 7, 265

Gemology course, 194 Genetics courses, 167

Geology courses, 194-197 Health Science Interpreting, sign language, 60 courses, 205-206 German courses, 216 Italian courses, 217 degree, 118 Gerontology Hematology courses, 227 concentration, 50 courses, 258 Henderson House, 277 Japanese courses, 217-218 Grade Change Policy, 30 Job counseling, 9-11 Histology courses, 168 Grade-point average, 31 Job placement services, 10 History courses, 206-213 Grade reports, 30 lob-search seminars, 10 degrees, 137-138 Grading system, 30-32 program consultants, 127 Joint degree, 74 Holidays, 3-5 Graduate program, 74 Journalism advertising, 40 Graduate schools Homework, 17 courses, 215-216 credential service for, 10 program consultant, 127 Honor at Northeastern University, Dean's List, 24 public relations, 54 276, 281-283 graduation with, 33 Judicial Advisor, 301 Graduation Honor society, 275 attendance at, 34 Judicial procedures, 19 Commencement Ceremony, 34 Honors program, 25 Commencement Data Card, 34 Hotel and restaurant date of, 4 Laboratory fees, 266 management with honor, 33 certificate, 50 policies and procedures for, Laboratory science, medical courses, 213-214 33-34 courses, 227 degree, 78 requirements for, 33 degree programs, 120-121 program consultant, 67 senior status, 34 program director and coordinator, 105 Human development services Grants, 267-268 certificate, 50-51 Lane Health Center, 275 Graphic design and visual Human resources management communication Language skills, 179-180 certificate, 51 certificate, 49 courses, 203-205 Languages: see also English courses, 157-163 modern, 216-219 degree, 79 degrees, 135-136 proficiency exam, 28 program consultants, 67 program consultants, 127 sign, 41, 60, 163-165 Humanities: see Arts and H Sciences: Liberal Arts Late payment fee, 265 Health Center, 275 Law and Criminal Justice I courses, 174-179 Health ed. teacher prep., 66 Illustration courses in, 158-163 for criminal justice, 98-104 Health information administration for health sciences, 201 Immunology course, 169 certificate, 114 for hotel and restaurant courses, 199-201 management, 213 In absentia status, 24 degree, 113 for political science, 241 Incomplete grades, 30 program consultant, 105 for real estate, 251 track, in Alternative Freshman-School of, 283 Independent study, 25 Year Program, 154 for sociology, 258 Infant/Child Care Health management Law enforcement: see Criminal concentration, 51 courses, 201-203 Justice and Security Insurance and Financial Services degree, 115-116 Legal Studies, 52 Institute, 285 program consultant, 105 Liberal Arts: see also Arts and Intensive courses, 7, 265 Health Professions and Sciences Sciences Advisory Committee, 301 Interdisciplinary courses, 214 APL, 28, 130 certificate programs, 36-37 certificates, 125 clinical assignments, 106 Internat'l business & culture, 51 Curriculum committee, 301 Curriculum Committee, 301 International students degrees, 127-151 degree programs, 105-126 English for, 189 program consultants and medical school admission enrollment of, 17, 27 advisors, 127 requirements, 107 speaking skills for, 179 Special studies, 24-25 program directors and transfer credit for, 27 coordinators, 105 Liberal Arts/Business minor,

Internships, 25

129, 140

track in Alternative Freshman-

Year Program, 154

Liberal Studies degrees, 128, 142

Libraries, 277-278

Library Advisory Committee, 301

Life skills development workshops, 11

Linguistics course, 192

Literature

courses, 189-193 degrees, 132-133 program consultants, 127

Long-term care administration courses, 203 specialization in, 116

M

Major change of, 23 second, 22-23

Make up for final examination, 31 for incomplete grades, 30

Malden High School map of, 308 office hours, 12 registration at, 3-5

Management: see also Business Administration certificate program, 52 courses, 219-222 degree programs, 71, 89 program consultants, 67

Management, Building Design Program, 284

Management information systems courses, 222-225 degrees, 80, 91 program consultants, 67

Management sciences courses, 228 program consultant, 67

Maps, 305

Marine Science and Maritime Studies Center, 277

Marketing certificate, 53 courses, 225-227 degrees, 81, 93 program consultants, 67

Marlboro High School map of, 308 office hours, 13 registration at, 3-5

Marshfield High School map of, 309 office hours, 13 registration at, 3-5 Mathematics courses, 228-230 placement tests, 18 program consultant, 105

MBA program, 27, 74

Media

courses, 215 program consultants, 127

Medical care, 275

Medical courses, preprofessional, 106

Medical insurance fee, 266

Medical laboratory science (MLS) courses, 227 degrees, 120-121 director/coordinator, 105

Medical school admission requirements, 107

Medical technology courses, 227 degree programs, 120-121 director/coordinator, 105

Meteorology courses, 194-196

Microcomputer Software, 53

Milford High School map of, 309 office hours, 13 registration at, 3-5

Minor, business, 129, 140

MIS: see Management Information Systems

MLS: see Medical Laboratory
Science

Modern languages courses, 216-219 proficiency examinations, 28 program consultant, 127

Monitoring, 19

Music

courses, 230-233 program consultants, 127 tutorials, 233

Music therapy courses, 231

N

Name change, 16

NAPM, 62

National Career Network, 11

National Institute for Food Industry, 62

Network Northeastern, 285

Northeastern University campuses of, 13-14, 277, 305-310 computer services at, 278 emergency closing of, 319 facilities of, 276 graduate schools of, 276, 281-283 libraries at, 277-278 maps of, 305-310 profile of, 276 programs at, 280-285 research at, 279 undergraduate colleges of, 276, 280-281

Nursing College of, 281, 283 courses, 233-234 degrees, 123 program coordinator, 105

Nutrition courses, 205

0

Oceanography courses, 194-195 Office hours, 13-14 On-Campus Recruiting, 10

Open houses, 8

Open sections, in BSBA programs, 72-73

Open enrollment policy, 15

Operations management certificate, 53 courses, 234-235 degree, 95

Operations Technology, courses, 234-235 degree programs, 95-97

Orientation, 8

P

Paralegal Program, 285

Paramedic Technology Program, certificate, 124 degree, 124 EMT/Basic, 61

Parasitology course, 168

Pass/fail courses, 18, 31

Pell Grant, 267

PEP examinations, 27, 33, 72

Personal counseling, 11

Personal Financial Planning certificate, 54

Pharmacology courses, 205, 233

at N.U., 279 Pharmacy and Health in health professions and Sciences, Bouvé, 280, 281 sciences, 105-126 for nursing, 234 in liberal arts, 127-151 for political science, 240 Philosophy in technology, 95-97 for sociology, 259 courses, 235-238 program consultant, 127 Psychology Reserved sections, in BSBA courses, 243-246 programs, 73 Phlebotomy, 62 degrees, 148 Residence requirement, 33 program consultants, 127 Photography courses, 162, 215 Responsibilities of students, 20 Public health courses, 205 Physical Education course, 235 Rights, of students, 20 Public relations Physics courses, 238-239 certificate, 54 Robbins Prize, 274 Physiology courses, 166-167 courses, 215 Russian courses, 218 program consultant, 127 Placement service, 9 Purchasing and materials Placement tests, 18; see also S CLEP examinations; PEP management Sales courses, 226 certificate, 55 examinations courses, 246-247 Saturday intensives, 7, 265 Plagiarism, 19 degree, 82 Schedule exam prep, 62 Policies and procedures for academic year, 3-5 program consultant, 67 for admission to degree of courses, 7 program, 21 Scholarships, 269-274 for enrollment and registration, Quality-point average, 31-32 Science: see also Health for grading, 30-32 Professions and Sciences Quarter-hour credit, 16 for graduation, 33-34 for transfer credit, 26-29 Science Programs Curriculum R Committee, 301 Policing Radiologic technology courses, 174-179 Secondary Education, 64-65 courses, 247-250 degree programs, 101-102 degrees, 125 Security: see also Criminal Political science program directors, 105 Justice and Security courses, 239-243 courses, 174-179 Reading and study skills degrees, 144-146 degrees, 103-104 course, 186 program consultants, 127 Seniors Real estate Preprofessional academic audit of, 34 courses, 250-252 credit by examination for, 33 medical courses, 102 program consultant, 67 speech language, 63 status reports for, 34 Salesperson's exam. prep., 63 Sigma Epsilon Rho Honor Society, Prerequisites, 18 Records, inspection of student, 20 275 Probation, academic, 22 Refund, of tuition, 265 Sign language Professional clubs, 275 certificate programs, 41, 60 Registrar, Office of, 13 courses, 163-165 Professional preparation Registration programs, program consultant, 127 dates for, 3-5 APICS, 61 Small business management and fee for, 264 CTL, 61 entreprenuership procedures for, 13 EMT/Basic, 61 certificate, 55 NAPM, 62 Religion courses, 171, 220 National Institute for the courses, 237-238, 256 Food Industry, 62 program consultant, 127 Social clubs, 278 Real Estate Salesperson, 63 Remote-site instruction, 285 Sociology courses, 256-259 Teacher Prep., 64-66 Sociology-Anthropology Requirements Programs of study, courses, 255-256 changes in, 23 Alternative Freshman-Year, degrees, 149 for graduation, 33 152-154 program consultants, 127 residence, 33 in business administration, substitutions for, 23, 39 67-94 Spanish courses, 218-219 validation of, 26 certificate, 38-66 Speaking skills, 179-180 changes in, 23 Research in criminal justice and security, for criminal justice, 174 Special Programs, 61-66 98-100 for economics, 185 Special students, 18-19 degrees, 21-25, 69-151 for marketing, 226

Special studies, 24, 73

Speech-Language, Pathology/ Audiology courses, 254-255

Sports facilities, 275

Stafford Student Loan, 268

State Scholarship, 268

State-of-the-Art Engineering Program, 284

Statistics

courses in, 182-183 for criminal justice, 174 for health sciences, 201 for psychology, 243-244 for quality control, 227

Status reports academic, 24 senior, 34

Student Center fee, 266

Student records, inspection of, 20

Students, 7, 20

Study skills course, 186

Study Skills Development Workshop, 11

Substitution, of courses, 23

Suburban campuses, maps of, 306-310 office hours, 13 registration at, 3-5

Swedish courses, 218

Systems analysis courses, 223-224

Т

Taxation courses, 157

Teacher Preparation courses, 186-188 elementary/secondary, 64-65 health ed., 66

Technical communications courses, 260-262 degree, 151 program consultant, 127

Technical writing certificate, 56 courses, 260-262

Technology associate in science in, 95 bachelor of science in, 96 program consultants, 95

Telecast instruction, 285

Test Preparation Program, 285

Testing at Counseling Center, 11

Tests: see Examinations

Theatre courses, 181-182

Therapeutic recreation courses, 252-254 Curriculum Committee, 301

Three Payment Option, 264

Transcripts fee for, 30, 266 obtaining, 30 for transfer credit, 26

Transfer credit
for certificate programs, 38-39
by examination, 27
for extra-institutional learning, 29
for international students, 27
procedure for, 26
in senior year, 33
validation in BSBA program, 26, 72

Transportation and physical distribution management certificate program, 56 courses, 262-263 degree program, 83 program consultant, 67

Tuition and fees, 264
for Alternative Freshman-Year
Program, 153
Default Policy, 265, 320
financial aid for, 267-268
Refund, 265
Three Payment Option, 264
Underwritten
by employers, 265

Tutorials, advanced, 24-25

Tutorial services, 9

IJ

Undergraduate colleges, 276, 280-281

University College administrative officers, 300 class size at, 7 convenience of, 7 counseling services at, 8-11 faculty of, 7, 286-299 office of, 13-14 profile of, 2 programs at, 6, 35-37 students at, 7

UNIX for Business, 57

1

Vacations, 3-5

Validation in BSBA degree program, 26, 72 in Nursing, 27

Veteran's benefits, 265

Vocational counseling, 9-11, 170

W

Warren Center, 277

Westwood High School map of, 310 office hours, 13 registration at, 3-5

Weymouth Junior High School map of, 310 office hours, 13 registration at, 3-5

Withdrawal, from course absence, 16 procedure for, 19 tuition refund, 265

Write Place, 6

Writing: see also Communications certificates, 56, 57 courses, 189-194, 260-262 degrees,132-133, 151 placement tests, 18 program consultants, 127 technical, 151, 260-262

X

X-ray technology courses, 247-250 degrees, 125-126 program directors, 105 Northeastern University is dedicated to providing a diverse student population with an academic program and a course of professional preparation of the highest quality. The University values equally knowledge for its own sake, knowledge as a means to success in the workplace, and knowledge as a cornerstone of personal achievement and satisfaction. As a private, urban university committed to reinforcing the links between the academy and society, Northeastern is determined to maintain its reputation as a friend of the city of Boston and a partner of the Commonwealth of Massachusetts.

The Northeastern University University College Bulletin contains the University's primary statements about these academic programs and degree and certificate requirements, as authorized by the president or Board of Trustees. For information about other academic policies and procedures; student responsibilities, academic and cocurricular life; faculty rights and responsibilities; or general personnel policies, benefits, and services, please refer to the Academic Operations Manual, Undergraduate and Graduate Student Handbook, Cooperative Education Handbook, Faculty Handbook, Benefits and Services Handbook, and related procedural guides as appropriate.

The University College Bulletin should be used in conjunction with the Undergraduate Catalog, Undergraduate and Graduate Student Handbook, Cooperative Education Handbook, and other procedural guides that contain Northeastern University's primary statements about academic programs, policies, and procedures; degree requirements; student responsibilities; and general personnel policies, benefits, and

services.

Accreditation

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc., which accredits schools and colleges in the six New

England states.

Accreditation by the Association indicates that the institution has been carefully evaluated and found to meet standards agreed upon by qualified educators. The undergraduate business programs offered by Northeastern University are accredited by the American Assembly of Collegiate Schools of Business.

Delivery of Services

Northeastern University assumes no liability for delay or failure to provide educational or other services or facilities due to causes beyond its reasonable control. Causes include, without limitation, power failure, fire, strikes by University employees or others, damage by natural elements, and acts of public authorities. The University will, however, exert reasonable efforts, when it judges them to be appropriate, to provide comparable services, facilities, or performance; but its inability or failure to do so shall not subject the University to liability.

The Northeastern University Undergraduate Catalog contains current information about the University calendar, admissions, degree requirements, fees, and regulations; however, such information is not intended and should not be regarded to be

contractual.

Northeastern University reserves the sole right to promulgate and change rules and regulations and to make changes of any nature in its program, calendar, admissions policies, procedures, and standards, degree requirements, fees, and academic schedule whenever necessary or desirable, including, without limitation, changes in course content and class schedule, the cancellation of scheduled classes and other academic activities, and the substitution of alternatives for scheduled classes and other academic activities. In any such case, the University will give whatever notice is reasonably practical.

Notheastern University will endeavor to make available to its students a fine education and a stimulating and congenial environment. However, the quality and rate of progress of an individual's academic career and professional advancement upon completion of a degree or program are largely dependent on his or her own abilities, commitment, and effort. In many professions and occupations there are also requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These requirements may change while a student is enrolled in a program and may vary from state to state or country to country. Although the University stands ready to help its students find out about requirements and changes in them, it is the student's responsibility to initiate the inquiry.

Disability Resource Center

The Disability Resource Center provides a variety of disability-related services and accommodations to Northeastern University's students and employees with disabilities.

Northeastern University's compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 are coordinated by the Dean and Director of the Disability Resource Center. Persons requiring information regarding the Disability Resource Center should contact Dean G. Ruth Bork at 617-373-2675 or TTY 617-373-2730.

Disclaimer

Tuition rates, all fees, rules and regulations, and courses and course content are subject to revision by the president and the Board of Trustees at any time.

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio and television when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHDH (850), WRKO (680), and FM stations WBMX (98.5) and WFNX (101.7) are the stations authorized to announce the University's decision to close. Television stations WBZ-TV4, WCVB-TV5, and WHDH-TV7 will also report cancellations. Since instructional television courses originate from live or broadcast facilities at the university, neither the classes nor the courier service operate when the university is closed. Please listen to the radio or television to determine whether the University will be closed.

If a storm occurs at night, the announcement of university closing is given to the radio stations at approximately 6:00 a.m. Classes are generally cancelled for the entire day and evening at all campus locations unless stated otherwise. When a storm begins later in the day, cancellations of evening classes may be announced.

This announcement is usually made between 2:00–3:00 p.m.

Equal Opportunity Policy

Northeastern University does not discriminate on the basis of race, color, religion, sex, sexual orientation, age, national origin, disability, or veteran status in admission to, access to, treatment in, or employment in its programs and activities. In addition, Northeastern University will not condone any form of sexual harassment. Handbooks containing the University's nondiscrimination policies and its grievance procedures are available in the Office of Affirmative Action, 175 Richards Hall. Inquiries regarding the University's nondiscrimination policies may be directed to:

Ellen S. Jackson, Dean/Director Office of Affirmative Action 175 Richards Hall Northeastern University Boston, Masaachusetts 02115 617-373-2133

Inquiries concerning the application of nondiscrimination policies may also be referred to the Regional Director, Office for Civil Rights, United States Department of Education, J.W. McCormack Building, Post Office Court House, Room 222, Boston, Massachusetts 02109-4557.

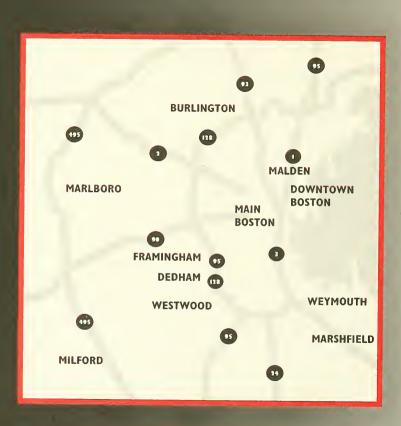
Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it necessary to do so. Specific details of the law as it applies to Northeastern are printed in the *Undergraduate and Graduate Student Handbook* and are distributed annually at registration of the University' colleges and graduate schools.

Tuition Default Policy

In cases where the student defaults on his/her tuition, the student shall be liable for the outstanding tuition and all reasonable associated collection costs incurred by the University, including attorneys' fees. The student's grades will be withheld until all outstanding costs are paid.





School of **Engineering Technology Bulletin 1994** 1996 Northeastern University



Northeastern University

School of Engineering Technology

Bulletin 1994–1996

120 Snell Engineering Center Boston, Massachusetts 02115

Telephone: 617-373-2500 Fax: 617-373-2501

About the cover.

The cover shows a complex graph depicting collision avoidance based on two spheres. "Real-time collision avoidance in two-armed robotic systems," R. G. Beaumont and R. M. Crowder. *Computer-Aided Engineering Journal*, Vol. 8, No. 6, December 1991. Used by permission. IEE Publishing Department, Michael Faraday House, Six Hills Way, Stevenage, Herts., England.

Contents

About This Bulletin Teaching Tomorrow's Technologists Today An Introduction to Engineering Technology 3 **School of Engineering Technology Program Descriptions** Overview Civil Engineering Technology Programs **Environmental Engineering Technology** Structural Engineering Technology Surveying and Highway Engineering Technology **Computer Technology Programs Electrical Engineering Technology Programs** Manufacturing Engineering Technology Programs **Mechanical Engineering Technology Programs** Aerospace Maintenance Engineering Technology **Telecommunications Program Certificate Program Description** C/C++/UNIX Specialist Certificate Program 30 **Minor Program Descriptions** Overview **Computer Technology Minor Program Electrical Engineering Technology Minor Program** Mechanical Engineering Technology Minor Program **Course Descriptions** Overview **Preprofessional Medical Courses** 34 Chemistry Civil Engineering Technology **Computer Technology Economics Electrical Engineering Technology** English General Engineering Technology

Human Resources Management

Industrial Engineering Technology 44
Industrial Management 44
Management 44
Management Science 45
Manufacturing Engineering Technology 45
Mathematics 46
Mechanical Engineering Technology 47
Operations Management 49
Physics 49
Northeastern University 51
A Profile of Northeastern 52
Where You'll Find Northeastern 52
Network Northeastern 53
University Libraries 53
Engineering Computer Center 54
Division of Academic Computing 54
Ell Student Center 54
Recreational Facilities and Programs 55
Social and Professional Clubs 55
Disability Resource Center 55
The Counseling Center 55
Lane Health Center 55
Department of Career Services 55
Cooperative Plan of Education 56
Alumni Association 56
Administrative Information 57
Admissions 57
Registration 59
Academic Standards 60
Graduation Requirements 63
Academic and Professional Awards 63
Additional Opportunities at Northeastern 64
Financial Information 65
Tuition and Fees 65
Financial Aid and Scholarships 66
Appendix 71
Faculty 73
Administration 79
Campus Maps 81

About This Bulletin

This *Bulletin* offers information about the evening and weekend programs available at Northeastern University's School of Engineering Technology. (If you are interested in Northeastern University's full-time day programs, call the Office of Undergraduate Admissions, 617-373-2200.)

For prospective students, we hope that after reading this publication you'll agree that a career in engineering technology can be exciting and challenging. As you'll soon discover, our evening and weekend programs are designed to enable you to pursue a career and an education at the same time.

Students already attending the School of Engineering Technology use the *Bulletin* as an important guide to the resources and policies of the University. In addition, students use the degree program descriptions to plan and track their academic careers.

The School of Engineering Technology Bulletin is divided into two parts: "Teaching Tomorrow's Technologists Today" and "Northeastern University."

"Teaching Tomorrow's Technologists Today" defines engineering technology and introduces you to the School of Engineering Technology. This section also contains descriptions of each program and course we offer.

The "Northeastern University" section reviews the benefits—the services and resources—that attending a large private university provides. We present the University's administrative and academic policies, as well as financial aid and scholarship opportunities.

Taking the Next Step

Because the evening and weekend technology programs have an open enrollment policy, you can register for courses without formally applying for admittance to a program. In fact, our students earn sixteen credits before petitioning for entrance to a program. For more details, carefully review the "Admissions" section. (See page 57.)

A Fee Schedule and Academic Calendar should have been enclosed with this *Bulletin*. The insert includes the current academic calendar, registration dates, and a list of the University's fees.

Before registration begins, obtain a copy of the *University College and School of Engineering Technology Schedule* for the next academic quarter. The *Schedule* indicates which courses will be offered each quarter, as well as when and where they will meet. Note that, since not all courses are offered every quarter, you must plan your course load for the coming academic year, not just the next quarter, by referring to the program and course descriptions contained in this *Bulletin* and obtaining a copy of the *Tentative Part-Time Schedule* published annually. For more details, review the "Registration" section. (See page 59.)

Finding Additional Help

If you have any questions, or are missing any of the forms mentioned in this *Bulletin*, call the School of Engineering Technology office, 617-373-2500.



Teaching Tomorrow's Technologists Today







An Introduction to Engineering Technology

What is engineering technology?

Engineering technology is the application of engineering principles and modern technology to help solve or prevent technical problems.

Engineering technology is a relatively new discipline. Before engineering technology programs like Northeastern's emerged, people with scientific or technical ambitions had a difficult decision to make: what kind of education should they pursue? College-bound students had three choices.

Choice number one was selecting a major from among the pure sciences: physics, chemistry, or biology. However, these majors are only appropriate for people interested in pursuing additional degrees, laboratory research, or careers in education.

The second choice was selecting from among the engineering science majors: civil engineering, electrical engineering, or mechanical engineering. But engineering requires highly developed analytical skills, and prepares people for careers conceptualizing and designing technical devices or systems.

The third choice was deciding not to attend college, but to enroll in a technical or vocational school. This route is best suited for people interested in the trades: that is, for people who want careers physically building or repairing machinery.

Engineering technology curricula introduced a fourth option. The programs are designed to meet the growing need created by the technological revolution for college-educated problem solvers who can support the engineering process by bridging the gap between the blueprints and the production line. These men and women can help engineers and tradespeople work effectively together.

Engineering technology programs include scientific and engineering principles relevant to your chosen field: you will come to understand why a system is designed in a particular fashion and how it works. This educational focus is often absent from a technical or vocational school education.

In addition, engineering technology students acquire hands-on technical skills that enable them to solve production and system implementation problems, and help them explain solutions to tradespeople.

Who are engineering technologists?

People who are part of the technology workplace include scientists, engineers, technologists, technicians, and tradespeople. All of these people have specialized education or training beyond the high-school level and often work together as a team. As on any team, the players have different but important roles.

Scientists are concerned with advancing our understanding of the laws of nature and our knowledge of scientific principles. The scientist is primarily involved with research.

Engineers employ the scientific knowledge developed by scientists in planning, designing, and constructing technical devices and systems. The engineer is a developer of technological innovations.

Engineering technologists work closely with engineers in coordinating people, material, and machinery in order to achieve the specific goals of a particular project. The engineering technologist often ensures that the engineer's designs and instructions are implemented efficiently and according to accepted practices.

3

School of Engineering Technology

You have a special kind of ambition that allows you to work full-time and attend the University after hours. The faculty and administration of the School of Engineering Technology share, admire, and respect your desire for professional and personal growth through higher education. We are as committed as you. We can help you achieve your goals.

When you enroll in the School of Engineering Technology, you are entering one of the oldest and finest undergraduate engineering technology programs in the country. Northeastern University established its first engineering technology program within the Polytechnic School in 1916. During 1926, the program was reorganized under a new entity within Northeastern: Lincoln Institute, later changed to Lincoln College. The program's most recent transformation occurred in 1984, when Lincoln College became the School of Engineering Technology.

Today's School of Engineering Technology is a unit of Northeastern University's College of Engineering. Although we offer courses at several locations and through the University's television system, Network Northeastern, our central offices are in the Snell Engineering Center on the Boston campus.

All of our engineering technology programs require laboratory courses that are conducted in facilities on the Boston campus. We've done our best to ensure that you can get the most out of these courses by equipping our laboratories with the latest available technology. We continue to acquire laboratory equipment that allows us to conduct experiments that were until recently impractical or impossible.

As a student at Northeastern's School of Engineering Technology, you are taught by faculty whose impressive professional experience can provide you with practical insights into the field.

In addition to the many resources offered to you as a School of Engineering Technology student, you are a fully vested member of the Northeastern University community. As such, you are invited to take advantage of the many assets the University provides. We encourage you to read the "Profile of Northeastern" section of this *Bulletin* for details of the University's facilities.

The School of Engineering Technology offers day programs in engineering technology to full-time students, as well as the evening and weekend programs described in this publication. All of our programs are at the undergraduate level, leading to an associate's, bachelor's or minor degree, or to a certificate.

Our evening and weekend degree programs span the following areas of concentration.

- Civil engineering technology, including environmental, structural, and surveying and highway engineering technology
- Computer technology
- Electrical engineering technology
- Manufacturing engineering technology
- Mechanical engineering technology, including aerospace maintenance engineering technology
- Telecommunications

We welcome your interest in Northeastern's School of Engineering Technology. In the following pages, you can learn about the specifics of each of our programs.

Program Descriptions

Overview

This section gives a description of each program offered by the School of Engineering Technology. Accompanying each description are specimen curricula for the majors offered within the specific program. The specimens list the degree's required courses and the sequence in which you should complete them. The specimens assume that you will initially enroll in courses during the fall quarter. If you are a transfer student, take

time off, or begin the program in a different quarter, please meet with one of our academic advisers. The adviser will help you take courses in a sequence that is academically sound and that will fulfill your degree program's graduation requirements. For more information about the program descriptions and curricula, contact an adviser at 617-373-2500.

Civil Engineering Technology Programs

Civil engineering professionals plan and construct a variety of structures and public works. The civil engineering technologist's major functions as a member of the technical team include: preparing surveys (topographical, geological, traffic); designing structures (buildings, bridges, dams); planning municipal systems (water, sewers, flood control); and developing transportation facilities (highways, railways, waterways).

We offer associate's degree programs with majors in environmental engineering technology; structural engineering technology; and surveying and highway engineering technology.

The associate's degree program in environmental engineering technology offers you the opportunity to prepare for responsibilities related to designing, constructing, and supervising municipal plants and systems that control the storage and distribution of water. Students may also prepare for responsibilities associated with the disposal of sewage and waste in urban areas, with an emphasis on preventing contamination and pollution. Career opportunities are with town, city, and state public works depart-

ments, private engineering consultants, architects, contractors, and engineering firms.

The associate's degree program in structural engineering technology offers the opportunity to prepare for planning, designing, and supervising the construction of buildings, bridges, foundations, flood-control projects, and other fixed structures. Professional opportunities include consulting engineering firms, architectural groups, contractors, railroads, government agencies, and the military.

The associate's degree program in surveying and highway engineering technology offers opportunities in the preparation and calculation of preliminary and legal surveys required for both basic and complex projects. These projects can include subdivision work, individual lot layouts, highway layouts, and projects relating to sewer systems, pipelines, power transmission lines, dams, reservoirs, and aqueducts. Career opportunities are with independent surveying companies, civil engineering companies, highway transit, railroad planning groups, cartographers, construction companies, and contractors.

Environmental Engineering Technology

(Major Code 011)

The Environmental Engineering Technology Program leads to the associate in engineering degree. Degree candidates must

earn 103 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	CHM	4130	Chemical Principles 1
		ECN	4115	Economic Principles and Problems 1
		MET	4301	Mechanics A
	Winter	ECN	4116	Economic Principles and Problems 2
		ENG	4111	Critical Writing 2
		MET	4314	Stress Analysis A
	Spring	MET	4315	Stress Analysis B
		MET	4370	Fluid Mechanics A
Fourth-Year Courses	Fall	CET	4324	Structural Analysis 1
		CET	4361	Materials and Soil Mechanics
	Winter	CET	4350	Environmental 1
		CET	4371	Concrete Design 1
	Spring	CET	4351	Environmental 2
		CET	4393	Construction Administration

8

Structural Engineering Technology

(Major Code 012)

The Structural Engineering Technology Program leads to the associate in engineering degree.

Degree candidates must earn 103 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	CHM	4130	Chemical Principles 1
		ECN	4115	Economic Principles and Problems 1
		MET	4301	Mechanics A
	Winter	ECN	4116	Economic Principles and Problems 2
		ENG	4111	Critical Writing 2
		MET	4314	Stress Analysis A
	Spring	CET	4321	Introduction to Structural Design
		MET	4315	Stress Analysis B
Fourth-Year Courses	Fall	CET	4324	Structural Analysis 1
Fourth-Year Courses	Fall	CET CET	4324 4361	Structural Analysis 1 Materials and Soil Mechanics
Fourth-Year Courses	Fall Winter			·
Fourth-Year Courses		CET	4361	Materials and Soil Mechanics
Fourth-Year Courses		CET	4361	Materials and Soil Mechanics Structural Analysis 2
Fourth-Year Courses	Winter	CET CET	4361 4325 4371	Materials and Soil Mechanics Structural Analysis 2 Concrete Design 1

Surveying and Highway Engineering Technology (Major Code 013)

The Surveying and Highway Engineering Technology Program leads to the associate in engineering degree. Degree candidates must earn 103 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	СНМ	4130	Chemical Principles 1
		ECN	4115	Economic Principles and Problems 1
		MET	4301	Mechanics A
	Winter	ECN	4116	Economic Principles and Problems 2
		ENG	4111	Critical Writing 2
		MET	4314	Stress Analysis A
	Spring	MET	4315	Stress Analysis B
		MET	4370	Fluid Mechanics A
Fourth-Year Courses	Fall	CET	4301	Plane Surveying
		CET	4316	Land Use Planning
	Winter	CET	4302	Geodetic Surveying
		CET	4307	Legal Aspects of Surveying
	Spring	CET	4303	Route Surveying
		CET	4311	Highway Engineering

Computer Technology Programs

The computer technology professional's work relates to the design and use of computer system hardware and software. Areas of study include the design and architecture of the computer system; software issues include the methodology and application of problem solving and the utilization of hardware.

We offer both an associate's and a bachelor's degree program in computer technology.

The associate's degree program in computer technology offers you the opportunity to understand the mathematical and technological foundations of both hardware and software. In addition to providing a more thorough

study of hardware and software, the bachelor's degree program gives you the opportunity to specialize in a specific area through five required technical electives.

Career opportunities may include computer programming for engineering, science, and business. Additional employment opportunities concern designing, engineering, and testing of computers; and interfacing computers with various types of equipment used in automation. Associate's degree graduates may qualify for entry-level positions in the areas listed, while bachelor's degree graduates may secure employment with more responsibility.

Computer Technology (Major Code 036)

The Computer Technology Program leads to the associate in engineering degree. Degree candi-

dates must earn 102 credits by completing the following four-year curriculum.

First-Year Courses	Fall	CT	4150	Computer Organization
		MTH	4107	College Algebra
	Winter	GET	4100	Computer Programming for Engineering Technology
		MTH	4108	Pre-Calculus
	Spring	ENG	4100	Critical Writing 1
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	GET	4170	Engineering Graphics 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	EET	4151	Circuit Analysis 1
		MTH	4122	Calculus 3
	Winter	СТ	4311	Programming with the C Language
		EET	4152	Circuit Analysis 2
	Spring	ECN	4115	Economic Principles and Problems 1
		ENG	4111	Critical Writing 2
		()	Social Science/Humanities Elective
Fourth-Year Courses	Fall	CT	4345	Assembly Language
		CT	4368	Semiconductor Logic
	Winter	CT	4330	Data Structures
		CT	4369	Computer Logic
	Spring	CT	4374	Introduction to CPU Hardware
		CT	4381	Operating Systems
		()	Social Science/Humanities Elective

Computer Technology (Major Code 037)

The Computer Technology Program leads to the bachelor of science in engineering technology degree. Degree candidates must earn at least

183 credits by completing the following sevenyear curriculum.

First-Year Courses	Fall	CT	4150	Computer Organization
		MTH	4107	College Algebra
	Winter	GET	4100	Computer Programming for Engineering Technology
		MTH	4108	Pre-Calculus
	\overline{Spring}	ENG	4100	Critical Writing 1
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	GET	4170	Engineering Graphics 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	\overline{Spring}	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	EET	4151	Circuit Analysis 1
		MTH	4122	Calculus 3
	\overline{Winter}	CT	4311	Programming with the C Language
		EET	4152	Circuit Analysis 2
	Spring	ECN	4115	Economic Principles and Problems 1
		ENG	4111	Critical Writing 2
		()	Social Science/Humanities Elective
Fourth-Year Courses	Fall	CT	4345	Assembly Language
		CT	4368	Semiconductor Logic
	Winter	CT	4330	Data Structures
		CT	4369	Computer Logic
	\overline{Spring}	CT	4374	Introduction to CPU Hardware
		CT	4381	Operating Systems
		()	Social Science/Humanities Elective

Fifth-Year Courses	Fall	CT	4335	Numerical Methods
		CT	4375	CPU Architecture
	Winter	CT	4355	Micro Peripheral Hardware
		()	Technical Elective
	Spring	CT	4340	Software Engineering Design
		CT	4380	Data Communication Methods
Sixth-Year Courses	Fall	CT	4356	Complex Peripheral Hardware
		CT	4480	Local Area Networks 1
	Winter	CMN	()	Communication Elective
		СТ	4351	Advanced Computer Organization
		()	Social Science/Humanities Elective
	Spring	CMN	()	Communication Elective
	op. mg	()	Social Science/Humanities Elective
)	Technical Elective
		()	reclinical Elective
Seventh-Year Courses	Fall	CT	4360	Industry Software
		()	Open Elective*
		()	Technical Elective
	Winter	CT	4365	Industry Hardware
		()	Technical Elective
	Spring	()	Social Science/Humanities Elective
		()	Social Science/Humanities Elective
		()	Technical Elective
Suggested Technical Elec	tives	СТ	4321	Programming with Ada
2000000 2000000000000000000000000000000		CT	4348	LISP
		CT	4363	Concurrent Programming
		CT	4377	VLSI Design
		CT	4382	Computer Graphics Programming
		CT	4383	Databases
		CT	4384	Large System Assembly Languages
		CT	4387	Bit Slice Microcomputers
		CT	4389	Single-Chip Microprocessors
		CT	4390	Special Problems in Computer Technology
		CT	4393	UNIX Operating System
		CT CT	4394 4395	Object Oriented Programming Computer Security
		CT	4395	PROLOG: An Introduction to Artificial Intelligence
		CT	4396	Advanced UNIX Programming
		CT	4470	Introduction to X Windows
		CT	4475	Concurrent Engineering and Design Testability
		CT	4481	Local Area Networks 2

^{*}Open Elective can be a three or four quarter-hour course.

Electrical Engineering Technology Programs

Electrical engineering technologists consider the design and operation of equipment and systems related to communications, data processing, electrical control, and power. In the power utility field, for example, the electrical engineering technologist is responsible for the generation, transmission, and distribution of electricity for light and power.

We offer both an associate's and a bachelor's degree program in electrical engineering technology.

The associate's degree program in electrical engineering technology relates to the design, development, and operation of communications, data processing, and electronic control equipment. The equipment is applied to computers, military and space explorations, and automated industrial production equipment. The bachelor's

degree program, in addition, relates to the installation and production of a variety of electrical and electronic equipment. Fields in which such equipment is applied include communications, data processing, industry, and in generating and utilizing electricity.

Career opportunities for associate's degree graduates include entry-level positions related to communications and electrical equipment, equipment manufacturing, and data processing and control. Career opportunities for bachelor's degree graduates are in public and private research laboratories; engineering consulting firms specializing in industrial and plant applications; electric utilities; and organizations concerned with the operation, manufacture, installation, or sale of electrical or electronic systems and equipment.

Electrical Engineering Technology

(Major Code 033)

The Electrical Engineering Technology Program leads to the associate in engineering degree. The program is accredited by the Technology Accreditation Commission of the Accreditation

Board for Engineering and Technology. Degree candidates must earn at least 105 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
	- 0	PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	EET	4151	Circuit Analysis 1
		MTH	4122	Calculus 3
	Winter	EET	4124	Circuits Lab 1
		EET	4152	Circuit Analysis 2
		MTH	4123	Differential Equations*
	Spring	EET	4125	Circuits Lab 2
		ENG	4111	Critical Writing 2
		()	Social Science/Humanities Elective
Fourth-Year Courses	Fall	EET	4311	Electronics 1
		EET	4353	Circuit Analysis 3*
		()	Social Science/Humanities Elective
	Winter	EET	4312	Electronics 2
		EET	4354	Circuit Analysis 4*
	\overline{Spring}	EET	4310	Electrical Measurements
	-pg	EET	4313	Electronics 3
		EET	4323	Electronics Lab
		atior Diffe Circ	n can si erential uit Ana	ot planning to enter a bachelor's degree program after gradu- ubstitute a social science/humanities elective for MTH 4123 Equations; EET 4314 Pulse and Digital 1 for EET 4353 dlysis 3; and an approved technical elective for EET 4354 dlysis 4.

16

Electrical Engineering Technology

(Major Code 035)

The Electrical Engineering Technology Program leads to the bachelor of science in engineering technology degree. The program is accredited by the Technology Accreditation Commission of

the Accreditation Board for Engineering and Technology. Degree candidates must earn at least 186 credits by completing the following seven-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	EET	4151	Circuit Analysis 1
		MTH	4122	Calculus 3
	Winter	EET	4124	Circuits Lab 1
		EET	4152	Circuit Analysis 2
		MTH	4123	Differential Equations
	Spring	EET	4125	Circuits Lab 2
		ENG	4111	Critical Writing 2
		()	Social Science/Humanities Elective
Fourth-Year Courses	Fall	EET	4311	Electronics 1
		EET	4353	Circuit Analysis 3
		()	Social Science/Humanities Elective
	Winter	EET	4312	Electronics 2
		EET	4354	Circuit Analysis 4
	Spring	EET	4310	Electrical Measurements
		EET	4313	Electronics 3
		EET	4323	Electronics Lab

				Electrical Engineering Technology Programs
Fifth-Year Courses	Fall	CMN	()	Communication Elective
		EET	4314	Pulse and Digital 1
		EET	4327	Advanced Electronics Lab 1*
	Winter	CMN	()	Communication Elective
	., ., .,	EET	4328	Advanced Electronics Lab 2*
		EET	()	Technical Elective
	Commiss or	EET		
	Spring		4329	Advanced Electronics Lab 3*
		EET	4330	Energy Conversion
		MET	4319	Mechanics
Sixth-Year Courses	Fall	EET	4370	Digital Computers 1
bian icai courses	1 000	()	Open Elective ⁺
				·
	III/i an 4 man	()	Social Science/Humanities Elective
	Winter	EET	4371	Digital Computers 2
		()	Social Science/Humanities Elective
		()	Social Science/Humanities Elective
	Spring	EET	4337	Distributed Systems
		EET	()	Technical Elective
Comments Warring Comments	TI. 11	DEM	()	The device A Tille of the
Seventh-Year Courses	Fall	EET	()	Technical Elective
		()	Social Science/Humanities Elective
	Winter	EET	4377	Control Engineering 1
		EET	()	Technical Elective
		()	Social Science/Humanities Elective
	Spring	EET	4378	Control Engineering 2
		()	Social Science/Humanities Elective
C		Offi	4011	Decrease in a with the C.I among a
Suggested Technical Electi	ives	CT CT	4311 4374	Programming with the C Language Introduction to CPU Hardware
		CT	4375	CPU Architecture
		CT	4475	Concurrent Engineering and Design Testability
		EET		Pulse and Digital 2
		EET	4317	Principles of Communication Systems 1
		EET	4318	Principles of Communication Systems 2
		EET	4319	Principles of Communication Systems 3
		EET	4360	Photovoltaic Technology
		EET	4362	Basic Power Systems 1
		EET	4363	Basic Power Systems 2
		EET EET	4364 4391	Basic Power Systems 3 Basic Optics and Optical Systems Design
		EET	4392	Optoelectronics and Fiber Optics
		EET	4393	Applied Wave Optics
		GET	4356	Engineering Economy
		GET	4393	Engineering Probability and Statistics
		MET	4340	Thermodynamics A
		MET	4380	Materials A
		may Elect	be sub	EET 4342, and EET 4343 Power and Control Labs 1 through 3 stituted for EET 4327, EET 4328, and EET 4329 Advanced Labs 1 through 3. ive can be a three or four quarter-hour course.

Manufacturing Engineering Technology Programs

Manufacturing systems require interactions between machines and people. Manufacturing engineering technology is concerned with the design and use of manufacturing systems in the industrial environment.

We offer both an associate's and a bachelor's degree program in manufacturing engineering technology.

The degree programs in manufacturing engineering technology offer you the opportunity to become familiar with the machines, materials, and processes used in manufacturing. The pro-

grams emphasize the emerging use of computers without sacrificing attention to traditional areas of a manufacturing education. Areas addressed in the programs include materials and processes, computer-aided manufacturing, numerical control, and robotics. The core courses, combined with hands-on laboratory experiences, allow students to develop the skills required to work in manufacturing. Career opportunities are within various manufacturing industries, such as aircraft or electronics manufacturing.

Manufacturing Engineering Technology

(Major Code 055)

The Manufacturing Engineering Technology Program leads to the associate in engineering

degree. Degree candidates must earn 103 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Laboratory 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Laboratory 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Laboratory 3
Third-Year Courses	Fall	MFG	4321	Computer-Aided Manufacturing 1
		MTH	4122	Calculus 3
	Winter	GET	4393	Engineering Probability and Statistics
		MFG	4322	Computer-Aided Manufacturing 2
	Spring	CHM	4130	Chemical Principles 1
		ENG	4111	Critical Writing 2
		MFG	4311	Manufacturing Materials and Processes 1*
Fourth-Year Courses	Fall	MFG	4312	Manufacturing Materials and Processes 2
		MFG	4331	Computer Methods in Manufacturing Design 1
	Winter	EET	4320	Electricity and Electronics
		MFG	4332	Computer Methods in Manufacturing Design 2
	\overline{Spring}	ECN	4115	Economic Principles and Problems 1
		()	Social Science/Humanities Elective
		()	Technical Elective

^{*}MET 4380 Materials A may be substituted for MFG 4311 Manufacturing Materials and Processes 1.

Manufacturing Engineering Technology

(Major Code 056)

The Manufacturing Engineering Technology Program leads to the bachelor of science in engineering technology degree. Degree candidates must earn 188 credits by completing the following seven-year curriculum.

First-Year Courses	Fall	CHM	4130	Chemical Principles 1
		GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	\overline{Spring}	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	\overline{Spring}	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	MFG	4321	Computer-Aided Manufacturing 1
		MTH	4122	Calculus 3
	Winter	GET	4393	Engineering Probability and Statistics
		MFG	4322	Computer-Aided Manufacturing 2
	Spring	ENG	4111	Critical Writing 2
		MFG	4311	Manufacturing Materials and Processes 1*
		()	Social Science/Humanities Elective
Fourth-Year Courses	Fall	MFG	4312	Manufacturing Materials and Processes 2
		MFG	4331	Computer Methods in Manufacturing Design 1
		()	Social Science/Humanities Elective
	Winter	EET	4320	
		MFG	4332	Computer Methods in Manufacturing Design 2
	\overline{Spring}	CHM	4130	Chemical Principles 1
		ECN	4115	Economic Principles and Problems 1
		()	Social Science/Humanities Elective

^{*}MET 4380 Materials A may be substituted for MFG 4311 Manufacturing Materials and Processes 1.

				Manufacturing Engineering Technology Programs
Fifth-Year Courses	Fall	MET	4301	Mechanics A
		MS	4332	Statistical Quality Control
		()	Social Science/Humanities Elective
	Winter	OM	4301	Introduction to Operations Management
		MET	4302	Mechanics B
		MFG	4341	Introduction to Computer-Aided Design
	Spring	()	Social Science/Humanities Elective
	Spring		· ·	Social Science/Humanities Elective
		()	Technical Elective
		()	rechiucai Elective
Sixth-Year Courses	Fall	GET	4356	Engineering Economy
		()	Technical Elective
	Winter	OM	4314	Productivity Enhancement and Quality
		MET	4340	Thermodynamics A
				·
	Cmarian	(MEC	4951	Social Science/Humanities Elective
	Spring	MFG		Assembly Automation
		()	Technical Elective
Seventh-Year Courses	Fall	MEG	4361	Numerical Controlled Machines (Basic)
	1 010	MFG	4381	Plant Layout and Design
	TT724			
	Winter	MFG		Robotics
		()	Technical Elective
	Spring	HRM	4301	Organizational Behavior
		()	Social Science/Humanities Elective
		()	Technical Elective
Suggested Technical Electives		СТ	4345	Assembly Language
		СТ	4380	Data Communication Methods
		CT	4395	Computer Security
		CT	4475	Concurrent Engineering and Design Testability
		CT	4480	Local Area Networks 1
		CT		Local Area Networks 2
		EET	4381	Telecommunications Systems 1
		EET	4382	Telecommunications Systems 2
		EET	4383	Telecommunications Systems 3
		EET EET	4384 4391	Video Communications Basic Optics and Optical Systems Design
		EET	4392	Optoelectronics and Fiber Optics
		EET	4393	Applied Wave Optics
		MET	4303	Mechanics C
		MET	4314	Stress Analysis A
		MET	4315	Stress Analysis B
		MET	4370	Fluid Mechanics A
		MET	4371	Fluid Mechanics B
		MFG	4313	Modern Manufacturing Materials and Processes
		MFG	4390	Special Topics in Manufacturing Technology
		MFG	4391	Independent Study in Manufacturing Technology Special Problems in Manufacturing Technology
		MFG	4392 4393	Independent Study
		MI, G	4030	independent orday

Mechanical Engineering Technology Programs

Mechanical engineering technologists harness power resources that help machinery perform useful tasks. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering is concerned with the motion and kinetics of devices that are activated by hydraulic, electrical, mechanical, and thermodynamic forces.

We offer both an associate's and a bachelor's degree program in mechanical engineering technology. A bachelor's degree program in aerospace maintenance engineering technology is also offered.

The associate's degree offers you the opportunity to prepare to be an entry-level technician in designing, producing, and installing mechanical tools, machinery, engines, and transportation equipment. The bachelor's degree focuses on designing, developing, operating, and installing equipment that involves interactions of mechanical, hydraulic, and thermodynamic systems. The equipment may include machinery, engines, boilers, furnaces, air-conditioning systems, heating systems, and transportation.

Graduates of the associate's degree program in mechanical engineering technology (MET) may find entry-level career opportunities in almost any industry or engineering organization.

The mechanical engineering technology field provides opportunities for people with a broad range of interests, motivations, and abilities. For example, as a graduate working in the materials area you might be involved in specifying materials for a particular application; determining the cause of failures in the field; dealing with corrosion problems and corrosion prevention; and working with the manufacture and production of materials, or their sales and delivery.

Manufacturing attracts many MET graduates. As a tool designer, you might design a fixture for holding parts as they are manufactured. As a manufacturing technologist, you might specify how a complicated part is made, which proce-

dure will come first, and the cost of the operation. You might determine which machines are required to make a certain part. Or, you might program computerized numerical control (CNC) machines or robots, devise efficient material-handling schemes, and plan the flow of materials from raw stock to finished product.

Another area in the field is mechanical design. At a technician level a designer needs basic graphics skills and will typically work on a computer graphics terminal. Such people generally have excellent drafting skills. Designers, whether technicians or technologists, also need to understand material properties and manufacturing processes, so that designs use materials effectively and can be manufactured efficiently.

Design analysis, another popular career focus, is the proper sizing and shaping of materials based on their function (that is, the loads they must carry, the operating environment, and other service conditions). The designer may work on airplanes, ships, engines, oil well drilling or pumping equipment, toys, medical equipment, food processing equipment—the possibilities are endless.

Another career option is plant or building management, which involves heating, ventilation, air-conditioning, water, lighting, plumbing, and electrical power requirements. Career opportunities also exist in product or system operation, testing, and technical sales.

The bachelor's degree program in aerospace engineering technology offers preparation for designing, developing, operating, installing, and producing aircraft and aircraft component systems. Career opportunities are available in technical, support, and management positions within the aircraft industry. Additional opportunities may be found within engineering teams that manufacture aircraft or spacecraft components, and among design/application positions in both the civilian and military aerospace markets.

Mechanical Engineering Technology

(Major Code 021)

The Mechanical Engineering Technology Program leads to the associate in engineering degree. The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. Degree candidates must earn 107 credits by completing the following four-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1			
		MTH	4107	College Algebra			
	Winter	GET	4171	Engineering Graphics 2			
		MTH	4108	Pre-Calculus			
	Spring	GET	4100	Computer Programming for Engineering Technology			
		MTH	4120	Calculus 1			
Second-Year Courses	Fall	MTH	4121	Calculus 2			
		PHY	4117	Physics 1			
		PHY	4196	Physics 1 Physics Lab 1 Calculus 3 Physics 2 Physics Lab 2 Critical Writing 1 Physics 3 Physics Lab 3 Technical Communications Kinematics Mechanics A			
	Winter	MTH	4122	Calculus 3			
		PHY	4118	Physics 2			
		PHY	4197	Physics Lab 2			
	Spring	ENG	4100	Critical Writing 1			
		PHY	4119	Physics 3			
		PHY	4198	Physics Lab 3			
Third-Year Courses	Fall	GET	4306	Technical Communications			
		GET	4364	Kinematics			
		MET	4301	Mechanics A			
	Winter	CHM	4103	Chemical Principles 1			
		MET	4302	Mechanics B			
	Spring	MET	4314	Stress Analysis A			
		MET	4380	Materials A			
Fourth-Year Courses	Fall	ECN	4115	Economic Principles and Problems 1			
		MET	4315	Stress Analysis B			
		MET	4388	Measurement and Analysis 1			
	Winter	ENG	4111	Critical Writing 2			
		MET	4340	Thermodynamics A			
		MET	4389	Measurement and Analysis 2			
	Spring	MET	4370	Fluid Mechanics A			
		MET	4391				
		()	Social Science/Humanities Elective			

^{*}MET 4392 Fluid Mechanics Laboratory or MET 4393 Thermal Analysis Laboratory may be substituted for MET 4391 Mechanics Laboratory.

Mechanical Engineering Technology

(Major Code 023)

The Mechanical Engineering Technology Program leads to the bachelor of science in engineering technology degree. The program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology. Degree candidates must earn 189 credits by completing the following seven-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		MTH	4107	College Algebra
	Winter	GET	4171	Engineering Graphics 2
		MTH	4108	Pre-Calculus
	Spring	GET	4100	Computer Programming for Engineering Technology
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	MTH	4122	Calculus 3
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	ENG	4100	Critical Writing 1
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	GET	4306	Technical Communications
		GET	4364	Kinematics
		MET	4301	Mechanics A
	Winter	CHM	4103	Chemical Principles 1
		MET	4302	Mechanics B
	Spring	MET	4314	Stress Analysis A
		MET	4380	Materials A
Fourth-Year Courses	Fall	ECN	4115	Economic Principles and Problems 1
		MET	4315	Stress Analysis B
		MET	4388	Measurement and Analysis 1
	Winter	ENG	4111	Critical Writing 2
		MET	4340	Thermodynamics A
		MET	4389	Measurement and Analysis 2
	Spring	MET	4370	Fluid Mechanics A
		MET	4391	Mechanics Laboratory
		()	Social Science/Humanities Elective

				Mechanical Engineering Technology Programs
Fifth-Year Courses	Fall	GET	4356	Engineering Economy
		MET	4303	Mechanics C
	Winter	MET	4341	Thermodynamics B
		MET	4371	Fluid Mechanics B
		MET	4392	Fluid Mechanics Laboratory
	Spring	MET	4342	Refrigeration and Air-Conditioning
		MET	4481	Materials B
Sixth-Year Courses	Fall	MET	4343	Heat Transfer
			4393	Thermal Analysis Laboratory
		()	Social Science/Humanities Elective
	Winter	MET	4330	Mechanical Design A
		()	Social Science/Humanities Elective
	Spring	MET	4331	Mechanical Design B
		MET	4395	Mechanical Projects Laboratory
		()	Social Science/Humanities Elective
Seventh-Year Courses	Fall	CMN	()	Communication Elective
		()	Social Science/Humanities Elective
		()	Technical Elective
	Winter	CMN	()	Communication Elective
		EET	4320	Electricity and Electronics
		()	Technical Elective
	Spring	()	Open Elective*
		()	Social Science/Humanities Elective
		()	Technical Elective
Suggested Technical Elect	ives	CET	4301	Plane Surveying
		CET	4331	Steel Design 1
		CET	4371	Concrete Design 1
		MET	4414	Mechanical Vibrations
		MET	4416	Stress Analysis C
		MET	4444	Power Generation
		MET	4482	Applied Metallurgy

^{*}Open Elective can be a three or four quarter-hour course.

Aerospace Maintenance Engineering Technology (Major Code 098)

The Aerospace Maintenance Engineering Technology Program leads to the bachelor of science in engineering technology degree. Before entering the program, degree candidates must complete the East Coast Aero Technical School airframe and power plant technical curriculum or its equivalent. In addition, degree

candidates must complete four prerequisite courses. The prerequisite courses are MTH 4107 College Algebra; MTH 4108 Pre-Calculus; MTH 4120 Calculus 1; and CHM 4130 Chemical Principles 1. Degree candidates must earn at least 189 credits by completing the following five-year curriculum.

First-Year Courses	Fall	GET	4170	Engineering Graphics 1
		МТН	4121	Calculus 2
	Winter	GET	4171	Engineering Graphics 2
	W CHOCK		4122	Calculus 3
	Spring	GET	4100	Computer Programming for Engineering Technology
		()	Social Science/Humanities Elective
Second-Year Courses	Fall	ENG	4100	Critical Writing 1
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4111	Critical Writing 2
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	ECN	4115	Economic Principles and Problems 1
		MET	4301	Mechanics A
	Winter	MET	4302	Mechanics B
		MET	4340	Thermodynamics A
	Spring	MET	4314	Stress Analysis A
		MET	4380	Materials A

Fourth-Year Courses	Fall	MET	4388	Measurement and Analysis 1
		()	Social Science/Humanities Elective
		()	Social Science/Humanities Elective
	Winter	EET	4320	Electricity and Electronics
		MET	4341	Thermodynamics B
		MET	4389	Measurement and Analysis 2
	Spring	MET	4370	Fluid Mechanics A
		()	Social Science/Humanities Elective
Fifth-Year Courses	Fall	MET	()	Technical Elective
		()	Social Science/Humanities Elective
	Winter	MET	()	Technical Elective
		()	Open Elective*
		()	Social Science/Humanities Elective
	Spring	MET	4481	Materials B
		()	Social Science/Humanities Elective
		()	Social Science/Humanities Elective

Suggested Technical Electives

Same as Mechanical Engineering Technology suggested technical electives (see page 25).

^{*}Open Elective can be a three or four quarter-hour course.

Telecommunications Program

Telecommunications is an interdisciplinary concentration demanding skills and information from several areas of engineering technology. Modern society has experienced an unprecedented growth in information processing and communications, so that individuals who can help design and maintain information and communication systems are in high demand.

We offer an associate's degree program in telecommunications, which offers you the

opportunity to study the electronic transfer of information through voice, data, or video media. Specific methods of electronic transfer, such as electronic signals in wires, light waves in optic fibers, and radio waves in the earth's atmosphere are discussed. There are career opportunities in the telephone, data processing, radio transmission/reception, cable television, service, and computer industries.

Telecommunications (Major Code 038)

The Telecommunications Program leads to the associate in science degree. Degree candidates

must earn 101 credits by completing the following four-year curriculum.

First-Year Courses	Fall	EET	4180	Introduction to Telecommunications
		MTH	4107	College Algebra
	Winter	GET	4100	Computer Programming for Engineering Technology
		MTH	4108	Pre-Calculus
	Spring	GET	4170	Engineering Graphics 1
		MTH	4120	Calculus 1
Second-Year Courses	Fall	MTH	4121	Calculus 2
		PHY	4117	Physics 1
		PHY	4196	Physics Lab 1
	Winter	ENG	4100	Critical Writing 1
		PHY	4118	Physics 2
		PHY	4197	Physics Lab 2
	Spring	GET	4306	Technical Communications
		PHY	4119	Physics 3
		PHY	4198	Physics Lab 3
Third-Year Courses	Fall	EET	4151	Circuit Analysis 1
		EET	4384	Video Communications
	Winter	ECN	4115	Economic Principles and Problems 1
		EET	4124	Circuits Lab 1
		EET	4152	Circuit Analysis 2
	Spring	EET	4125	Circuits Lab 2
		EET	4310	Electrical Measurements
		ENG	4111	Critical Writing 2
Fourth-Year Courses	Fall	EET	4311	Electronics 1
		EET	4381	Telecommunications Systems 1
	-		4312	771
	Winter	EET	4512	Electronics 2
	Winter	EET EET	4312	Telecommunications Systems 2
	Winter Spring			
		EET	4382	Telecommunications Systems 2
		EET	4382	Telecommunications Systems 2 Electronics Lab

Certificate Program Description

C/C++/UNIX Specialist Certificate Program (Major Code 070)

This certificate enables individuals to improve or increase their knowledge of the latest computer software developments. People wishing to improve their chances of changing or obtaining a job dealing with state-of-the-art topics in the computer field should enroll in this program.

You may be eligible to enter the certificate program if you hold a BS, a BA, or have work experience in the computer industry and knowledge of a higher level language. In addition, a

combined maximum of two courses may be waived via transfer credit or proficiency examination. If you have none of the listed requirements but are interested in learning how to become qualified to enter the program, contact the School of Engineering Technology at 617-373-2500.

A sample program showing how the certificate can be earned in one year of part-time study, taking three courses per quarter, follows.

Fall	CT	4150	Computer Organization
	CT	4311	Programming with the C Language
	GET	4306	Technical Communications
Winter	CT	4330	Data Structures
	CT	4393	UNIX Operating System
	TCC	4301	Computer Software Technical Writing 1
Spring	CT	4340	Software Engineering Design
	CT	4394	C ⁺⁺ Object-Oriented Programming
	TCC	4302	Computer Software Technical Writing 2

Minor Program Descriptions

Overview

This section lists required courses for minor degrees in computer technology, electrical engineering technology, and mechanical engineering technology. You do not have to be enrolled in a School of Engineering Technology degree program to obtain one of these minors but must meet the course prerequisites published in the course descriptions section of this bulletin.

Before you pursue a minor, consult one of our academic advisers concerning eligibility and scheduling. Advisers are available in the Engineering Technology Dean's Office, 120 Snell Engineering Center, or by phone at 617-373-2500. Minors will be indicated on your transcript after you have satisfactorily completed the minor requirements and have received your degree.

Computer Technology Minor Program

To qualify for the minor in computer technology, you must complete the following courses and laboratory.

CT	4311	Programming with the C Language
CT	4315	FORTRAN Laboratory
CT	4330	Data Structures
CT	4340	Software Engineering Design
CT	4345	Assembly Language
CT	4374	Introduction to CPU Hardware
CT	4375	CPU Architecture or CT 4393 UNIX Operating System
CT	4381	Operating Systems

Electrical Engineering Technology Minor Program

To qualify for the minor in electrical engineering technology, you must complete the following courses and laboratories.

EET	4124	Circuits Laboratory 1
EET	4125	Circuits Laboratory 2
EET	4151	Circuit Analysis 1
EET	4152	Circuit Analysis 2
EET	4311	Electronics 1
EET	4312	Electronics 2
EET	4323	Electronics Laboratory
EET	4330	Energy Conversion or EET 4377 Control Engineering 1

Mechanical Engineering Technology Minor Program

To qualify for a minor in mechanical engineering technology, you must complete the following courses.

MET	4301	Mechanics A
MET	4302	Mechanics B
MET	4314	Stress Analysis A
MET	4340	Thermodynamics A
MET	4370	Fluid Mechanics A
MET	4380	Materials A
MET	4388	Measurement and Analysis 1
MET	4389	Measurement and Analysis 2

Course Descriptions

Overview

This section contains the following information about each course offered by the School of Engineering Technology.

 Course number. Each alpha/numeric course number provides specific information.
 For example, consider the course number CET 4301.

CET 4301 The alpha code indicates which department is offering the course. In this case, the department is civil engineering technology.

CET 4301 The first number in the numeric code indicates whether the course is offered through the full- or part-time division. All 4000 series courses are offered part-time and most 1000 series courses are offered full-time.

CET 4301 The last three numbers in the code indicate the course level: 001–099 are compensatory courses; 100–299 are introductory- to intermediate-level courses; and 300–699 are advanced-level courses.

- Course title.
- Number of quarter hours (QH). One quarter hour represents approximately three hours of student learning time (fifty minutes of lecture plus two hours of independent study) per week. If appropriate, class hours (CH) and lab hours (lab) are listed as well.
- Quarters in which the course is offered. Not all courses are offered every quarter. If the code TBA is printed next to a course title, call the program coordinator at 617-373-2500 for scheduling information.
- Topics discussed in the course.
- Prerequisites. Complete prerequisites before enrolling, unless otherwise specified.

Use the curriculum listed for your program to determine which courses you need to complete

in the next academic year ("Program Descriptions," see page 5). Use the course descriptions to read about each specific course and to learn the quarters in which the course is offered. Because most courses are not offered every quarter, plan your course load for the entire academic year, not just the next quarter.

Before registration, get the *University* College and School of Engineering Technology Schedule for the next quarter by calling 617-373-2500. The Schedule provides you with the meeting times and locations for the courses being offered during the next quarter.

Academic counseling is available to help plan your course load for the coming academic year. In addition, you can get a current *Tentative Part-Time Schedule*, which is published annually. If you need help, contact a School of Engineering Technology program counselor at 617-373-2500.

Policy on Changes of Program

The School of Engineering Technology reserves the right to cancel, modify, or add to the courses in any curriculum. The University further reserves the right to change the requirements for graduation. Any changes that may be made from time to time relative to this policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

Guidelines for Choosing Electives

Many of the degree program curricula require students to complete electives. The electives give students the opportunity either to explore topics beyond the curriculum's scope or to gain extensive knowledge about topics introduced by the core courses.

Open Electives

Any course is acceptable as an open elective except physical education, military science, and preparatory courses. An open elective may be either a three or a four quarter-hour course depending on your major.

Social Science/Humanities Electives

Social science/humanities electives are offered through University College and must be chosen from a list that is available from the School of Engineering Technology. Some majors require that six quarter-hours of social science/humanities electives be in the communication studies (CMN) category.

Technical Electives

Technical electives must be chosen from the list of suggested technical electives appearing at the end of the respective degree curriculum. Students wishing to take an upper-level course that does not appear on the list must petition for permission before attending the class. Students should submit a proposed program of elective courses—preferably representing a minor field of concentration consistent with personal career objectives—for approval by the program coordinator.

Preprofessional Medical Courses

The following information is provided for students who plan to apply for admission to schools of medicine, osteopathy, dentistry, podiatry, or optometry. Those who wish to pursue veterinary medicine may need to meet different entrance requirements and should consult the chair of the Health Professions Advisory Committee for additional advice at 617-373-2818.

Medical School Admission Requirements

Students must complete the following courses before they may enroll in medical school, and should complete them before taking the school's particular admission test (MCAT, DAT, and so on). MCAT exam applications are available from the Office of Career Development, 120 Ryder Hall, 617-373-2430.

Biology: one year (with labs)
General chemistry: one year (with labs)
Organic chemistry: one year (with labs)
Physics: one year (with labs)
College mathematics: one year (with some calculus)
College English: one year

Northeastern University's Health Professions Advisory Committee provides academic advice and help with professional school applications to students in any of the University's health programs. Although advice is available to anyone enrolled in a course, the committee can prepare evaluation letters only for those who have letters of recommendation from at least two Northeastern faculty members.

Sources of Advice

General Counseling, Application Procedures and Entrance Exams

C. H. Ellis, Jr., Chair Health Professions Advisory Committee Department of Biology College of Arts and Sciences 445 Richards Hall Northeastern University Boston, Massachusetts 02115 617-373-4032

Course Schedules and Counseling

Paula Vosburgh, Assistant Dean and Director Health Professions and Sciences Programs University College 266 Ryder Hall Northeastern University Boston, Massachusetts 02115

Physics and Mathematics Courses

617-373-2818

School of Engineering Technology 120 Snell Engineering Center Northeastern University Boston, Massachusetts 02115 617-373-2500

Course Sequences to Meet Minimum Admission Requirements

Acceptable course sequences can be taken at University College to prepare students for health profession schools. Completing one sequence from each category should meet the minimum requirements of most medical or dental schools. If you have questions about whether other courses might be applicable, contact Dean Vosburgh or Professor Ellis. You should contact medical or dental school(s) directly to obtain guidance on specific courses required for admission.

General Biology: BIO 4103, BIO 4104, BIO 4105. Lab required. Other biology courses—such as anatomy, physiology, and microbiology—may be acceptable, depending on the professional school. General biology is highly recommended even if you have already taken the other courses.

Chemical Principles: CHM 4130, CHM 4131, CHM 4132. Lab required.

Organic Chemistry: CHM 4261, CHM 4262, CHM 4263. Lab required.

General Physics: PHY 4117, PHY 4118, PHY 4119, and labs PHY 4196, PHY 4197, PHY 4198.*

Mathematics: MTH 4108, MTH 4120, MTH 4121.

English: ENG 4100, ENG 4111, ENG 4112.

Requirements in two additional areas, if needed—behavioral science and biochemistry—can be met by the following courses.

Behavioral Science: PSY 4110, PSY 4111, PSY 4112, and/or other psychology courses.

Biochemistry: CHM 4371, CHM 4372, CHM 4373 or BIO 4246, BIO 4247, BIO 4248.

Chemistry

CHM 4111 General Chemistry 1

This course has been replaced by CHM 4130 Chemical Principles 1.

CHM 4130 Chemical Principles 1[†] (4 QH) Fall, Summer

(Formerly CHM 4111 3 QH.) Introduces fundamental chemistry concepts including symbols, formulas, equations, atomic weights, and calculations based on equations. Covers gases, liquids, solutions, and ionization. Required lab is CHM 4137 Lab for Chemical Principles 1. Lab fee. (Not open to students who have taken CHM 4111.) *Prereq. MTH 4107 or concurrently or equiv.*

Civil Engineering Technology

CET 4301 Plane Surveying (4 QH) TBA

Examines surveying principles; theory of measurements; leveling; traverse computations; area calculation; and stadia principles and topography. *Prereq. MTH 4108*.

*Some medical schools have allowed PHY 4101 and PHY 4102 College Physics 1 and 2 to be used for admission. Before choosing this sequence, contact the school you wish to apply to for their preference for a physics course sequence.

This is a University College course offered at a different tuition rate.

CET 4302 Geodetic Surveying (4 QH) TBA

Introduces practical astronomy for surveying, including basic spherical trigonometry. Covers geodetic surveying, including precise leveling, triangulation, EDM equipment, and baseline measurements. *Prereq. CET 4301.*

CET 4303 Route Surveying (4 QH) TBA

Studies simple and compound curves; vertical curves; earthwork computations; solution of the mass diagram; and an introduction to route location by photogrammetry. *Prereq. CET 4301*.

CET 4307 Legal Aspects of Surveying (4 QH) TBA

Covers registry of deeds and probate; ownership of land; deeds; descriptions of qualifying expression; adverse possession; Massachusetts land court; and expert witness. *Prereq. CET 4301*.

CET 4311 Highway Engineering (4 QH) TBA

Explores engineering considerations in the planning and construction of modern highways and highway routing; traffic flow and traffic control; and computer applications to transportation problems. *Prereq. CET 4301*.

CET 4316 Land Use Planning (4 QH) TBA

Studies environmental, sociological, economic aspects, and traditional basis for land use planning. Covers objectives, content, form, and preparation of plan; community and public facilities; transportation; and environmental impact and plan implementation. *Prereg. GET 4171.*

CET 4321 Introduction to Structural Design (2 CH, 4 lab, 4 QH) TBA

Presents tabular methods for the design of members and connections using the AISC Code. *Prereq. GET 4171 and MET 4314.*

CET 4324 Structural Analysis 1 (4 QH) TBA

Surveys the reactions, shears, bending moments, and forces developed by loading systems on beams and trusses; influence lines for beams, girders, and trusses; and solutions for forces from moving load systems on statically determinate structures. *Prereq. MET 4315*.

CET 4325 Structural Analysis 2 (4 QH) TBA

Covers classical methods of deflection solution for beams and trusses. Discusses methods of solving statically indeterminate structures. *Prereq. CET* 4324.

CET 4331 Steel Design 1 (4 QH) TBA

Examines design of steel members in structural frames, tension, compression, bending and eccentrically loaded members; and design of plate girders for buildings. *Prereq. CET 4321 and MET 4315*.

CET 4332 Steel Design 2 (4 QH) TBA

Presents design of steel for highway bridges, composite design in bridges and buildings, introduction to plastic analysis, and design in steel. *Prereq. CET 4331*.

CET 4350 Environmental 1 (4 QH) TBA

Examines principles of water supply engineering; population forecasting; and quality and quantity of water for various uses. Other topics include water treatment processes; collection and disposal of wastewater and storm water; modern treatment methods; and wastewater plant operation. *Prereq. CET 4341 and CHM 4103 or CHM 4111*.

CET 4351 Environmental 2 (4 QH) TBA

Studies the layout and design of water treatment and sewage treatment plants; and instrumentation and electrical equipment. Includes laboratory demonstrations. *Prereq. CET 4350*.

CET 4361 Materials and Soil Mechanics (4 QH) TBA

Examines the physical properties of portland cement, aggregates, mixing water and admixtures; batch proportioning; bituminous materials; index properties of soils, soil moisture and structure; compressibility; and theory of consolidation. *Prereq. MET 4315*.

CET 4371 Concrete Design 1 (4 QH) TBA

Examines the design of bending members, axially and eccentrically loaded columns by elastic and ultimate strength principles. *Prereq. MET 4315*.

CET 4372 Concrete Design 2 (4 QH) TBA

Covers the reinforced concrete design of basic structures, including considerations of continuity. Includes an introduction to prestressed concrete member design. *Prereq. CET 4371*.

CET 4393 Construction Administration (4 QH) TBA

Discusses contracts, specifications, and bidding procedures; estimating and scheduling, including critical path; and discussion of personnel administration and union negotiation. Includes bid preparation for a small project. *Prereq. None.*

CET 4399 Special Problems in Civil Engineering Technology (4 QH) TBA

Engages students in theoretical or experimental work under individual faculty supervision. *Prereq. Permission of department chair.*

Computer Technology

CT 4150 Computer Organization (4 QH) Fall

Presents basic computer architecture. Topics include number systems' operation and conversion, logic circuits, registers, data busses, ROM/RAM, microcomputer structure and operation, microprocessor internal components, microprocessor programming, and input/output processing. *Prereq. None.*

CT 4311 Programming with the C Language (4 QH) All Quarters

Teaches C, a general purpose language suitable for programming operating systems, and text-processing. Covers functions, arrays, character strings, global and local variables, scope rules, pointers, address arithmetic, structures, unions, and singular linked lists. A project is required. *Prereq. GET 4100*.

CT 4315 FORTRAN Laboratory (2 QH) TBA

Examines elements of the FORTRAN Language with emphasis on structured programming. Topics include matrices, subroutines, functions, random number generators, and file handling. Students use the University's computer laboratory facilities to run programs. *Prereq. CT 4311*.

CT 4321 Programming with Ada (4 QH) TBA

Teaches Ada, a programming language for numerical applications, system programming applications, and applications with real-time and concurrent execution requirements. Includes readability, strong typing, exception handling, data abstracting, tasking, and generic units. Involves using the University's computer facilities to write programs dealing with numerical and system programming applications. *Prereq.* CT 4311, or knowledge of Pascal or FORTRAN.

CT 4330 Data Structures (4 QH) Winter

Introduces methods of representing and manipulating data in computer memory. Covers stacks, queues, lists, trees, heaps, sets, graphs, hashing, searching, and sorting. Project required. *Prereq. CT 4311*.

CT 4335 Numerical Methods (4 QH) Fall

Presents computer methods for solving mathematical problems. Involves writing and running application programs using the University's computer facilities. Covers deterministic versus stochastic methods, random number generators, iterative versus noniterative solutions, maxima and minima in two and three variables, curve fitting in two and three variables, integrals, trapezoidal and Simpson's rules, slopes, difference equations in two and three variables, vector and matrix algebra, simultaneous linear equations, nonlinear equations, permutations, and combinations. *Prerea. CT 4311 and MTH 4122*.

CT 4340 Software Engineering Design (4 QH) Spring

Offers structured methods for developing complex computer software. Explores developing structured specifications, structured designs, and the computer programs for complex problems using the University's computers. Topics include partitioning, hierarchical organization, data flow diagrams, data dictionaries, structured English, decision trees, decision tables, structured charts, team design, structured programs, and maintainability. *Prereg. CT 4330.*

CT 4345 Assembly Language (4 QH) Fall

Teaches typical microprocessor assembly language. Involves writing and running programs on a 68000 microprocessor-based system. Covers CPU architecture, instruction sets, addressing modes, binary operation, code conversion, subroutines, macros, and input/output. *Prereq. CT 4150 and CT 4311*.

CT 4348 LISP (4 QH) TBA

Introduces an interactive language in which the LISP interpreter is commonly referred to as the read-evaluate-print loop. Discusses various levels of implementation in LISP, a language well-suited to implement the standard techniques of data structure manipulation. Also explores techniques for recursion, complex data structures, storage management, and symbol table manipulation. *Prereq. CT 4330*.

CT 4351 Advanced Computer Organization (4 QH) Winter

Examines the functional characteristics of complex and special purpose computer systems, and the functions of general purpose multi-user and multi-processing operating systems. Advanced topics include virtual memory and virtual machine architectures, distributed and multiprocessor systems, array processors, and system performance analysis. *Prereg. CT 4356 and CT 4375.*

CT 4355 Micro Peripheral Hardware (4 QH) Winter

Covers the elements of microprocessor peripheral hardware and its interfacing. Involves designing and analyzing microprocessor systems, including detailed schematics, timing diagrams, and technical documentation. Topics include serial input/output devices, DMA and interrupt control devices, standard busses, bus arbitration techniques, and bus support VLSI. *Prereq. CT 4374*.

CT 4356 Complex Peripheral Hardware (4 QH) Fall

Studies the interfacing and implementation of complex peripheral systems. Topics include disk and tape interfaces, graphic display devices; communication interfaces and subsystems; and input/output processors. *Prereq. CT 4355*.

CT 4360 Industry Software (4 QH) Fall

Surveys current commercial software packages and methods. Involves the exercise of commercial packages implemented on the University's computer facilities where applicable. Topics include specific current packages and methods drawn from the categories of: database management, scientific and statistical analysis, security and privacy, software assurance, and documentation. *Prereq. CT 4381*.

CT 4363 Concurrent Programming (4 QH) TBA

Examines the basic principles of concurrent programming. Students will write and run programs to demonstrate various aspects of concurrent programming techniques and issues. Topics include correctness of concurrent programs, material exclusion, timing Dekker's algorithms, the producer-consumer problem, monitors, semaphores, "Ada Rendezvous," critical regions, and conditional variables. *Prereq. CT 4311*.

CT 4365 Industry Hardware (4 QH) Winter

Discusses the latest industrial developments and trends in computer hardware, conducted as a seminar. *Prereq. CT 4356.*

CT 4368 Semiconductor Logic (4 QH) Fall

Presents basic topics of digital logic and electronics. Topics include diodes, transistors, integrated-circuit logic families, logic gates, Boolean algebra, combinatorial logic, flip-flops, and counters. *Prereq. EET 4152*.

CT 4369 Computer Logic (4 QH) Winter

Introduces the hardware building blocks of digital computers. Teaches students to specify configurations of gates and memory components to achieve combinational and sequential composite logical functions, and perform finite state machine design and analysis. Topics include gates, flip-flops, registers, decoders, ALUs, memory arrays, and synchronous and asynchronous state machines. *Prereq. CT 4368*.

CT 4374 Introduction to CPU Hardware (4 QH) Spring

Introduces the circuits and operation of microcomputers, focusing on microprocessor components and circuits, including detailed timing and functional analysis of their interactions. Topics include central processing unit, memory, addressing, clocking, bus concepts, interrupts, coprocessors, input/output, and instruction timing. *Prereq. CT 4345 and CT 4369*.

CT 4375 CPU Architecture (4 QH) Fall

Presents high performance microprocessor architecture and hardware interfacing techniques. Analyzes current commercial processors and their support components. Topics include internal CPU architecture, memory management, instruction prefetch, privilege states, bus cycles, control lines, input/output, interrupts, exceptions, and pipelining. *Prereg. CT 4374*.

CT 4377 VLSI Design (4 QH) TBA

Introduces Very Large Scale Integration (VLSI) Integrated Circuits (ICs), the key components of all modern computers. Examines MOS devices, circuits, design methods, and fabrication techniques used in producing custom VLSI ICs. Topics include MOS transistor characteristics; basic gate circuits; scaling; layout tools, both manual and automated; wafer fabrication techniques; standards; testing; and costs. *Prereq. CT 4369.*

CT 4380 Data Communication Methods (4 QH) Spring

Discusses the ISO Open Systems Interconnect model for communication systems, including the functional and operational aspects of data communication devices and software. Uses a black box approach. Topics include modems, control units, multiplexers, concentrators, front-end processors, and error checking. *Prereg. CT 4374.*

CT 4381 Operating Systems (4 QH) Spring

Introduces the basic principles and organization of operating system implementation. Topics include processor management, process multiplexing and synchronization, schedules, atomic operations and mutual exclusion, sequential and concurrent programming, memory, and device and data management. *Prereq. CT 4330 and CT 4345*.

CT 4382 Computer Graphics Programming (4 QH) TBA

Explores the computer plotting of two- and three-dimensional (2D and 3D) shapes. Involves writing and running programs using the University's computer and digital plotter. Topics include 2D transforms, 3D to 2D transforms, 3D transforms, surface representation, shading, hidden line, raster technology-color, introduction to interactive graphics, characters, curve fitting, and graphic data structures. *Prereq. GET 4100 and GET 4170.*

CT 4383 Databases (4 QH) TBA

Examines database organization structure and management. Involves writing and running programs exemplifying techniques developed in class, using the University's computer facilities. Topics include access methods, attributes, indices, keys, querying, searching and matching, file sets, inverted file sets, normal forms, and random access. *Prereq. CT 4330*.

CT 4384 Large System Assembly Languages (4 QH) TBA

Explores Macro, a VAX-11 assembly language, to show how basic components in the CPU are used during program execution. Topics include integer, real, and character instruction sets, various addressing techniques, procedure linkage, and system input/output. *Prereq. CT 4345*.

CT 4387 Bit Slice Microcomputers (4 QH) TBA

The epitome of hardware flexibility is represented by the bit slice CPU. Students examine the basic design ground rules common to this style of hardware design. *Prereq. CT 4355*.

CT 4389 Single-Chip Microprocessors (4 QH) TBA

When small 8-bit intelligent devices are rewired in high volume, the single-chip microprocessor in the form of the 3870, 8048, Z8, and others comes into play. An understanding of the hardware limitations of a single-chip system is the basis for this subject material. *Prereq. CT 4375*.

CT 4390 Special Problems in Computer Technology (4 QH) TBA

Students perform theoretical or experimental work under individual faculty supervision. *Prereq. Permission of department chair*:

CT 4391 Topics in Computer Technology (4 QH) TBA

Focuses on advanced topics in Computer Technology to be selected by the instructor. *Prereq. Permission of the instructor*.

CT 4393 UNIX Operating System (4 QH) Winter

Introduces UNIX operating system concepts, tools, and utilities. Helps students become proficient users. Develops a fundamental understanding and working knowledge of UNIX. Topics include system commands, file system concepts, text processing tools, electronic communication, processes, shell script programming, command procedures, pipes, I/O redirection, filters, system administration, and security. Students use the University's computer facilities to prepare course assignments. *Prereq. CT 4311*.

CT 4394 Object-Oriented Programming (4 QH) Spring

Examines the methodologies currently used in object-oriented programming languages, drawing on case studies of Small Talk, Flavors, CLOS, and C⁺⁺. Other topics include G-Base, an object-oriented database system, and the concepts of abstraction, polymorphism, class inheritance, locks, and generic dispatch. *Prereq. CT 4330*.

CT 4395 Computer Security (4 QH) TBA

Covers issues related to security in computing, including the history of security, encryption techniques and applications, secure communications, and software protection. Other topics include software verification and validation, designing security into the hardware, and products currently available for securing systems and data. These subjects will be addressed in terms of privacy as well as reliability. *Prereq. CT 4380 and CT 4381*.

CT 4396 PROLOG: An Introduction to Artificial Intelligence (4 QH) TBA

Introduces fundamental artificial intelligence (AI) terms and techniques, using PROLOG as a programming language. Topics include knowledge representation, search, parsing, logic, and inference techniques. Projects required. *Prereq. CT 4330.*

CT 4397 Advanced UNIX Programming (4 QH) TBA

Studies the design and development of C application programs that interface with the UNIX operating system kernel. Enables C programmers to interact with the UNIX operating system through system calls and library routines. Topics include system programming tools, fundamental concepts, file creation and access, signals and signal handling, multitasking, file and terminal I/O, process creation and program execution, and forms of interprocess communication and synchronization (pipes, message queues, semaphores, and shared memory). Students use the University's computer facilities to prepare course assignments. *Prereq. CT 4393*.

CT 4470 Introduction to X Windows (4 QH) TBA

Examines the basic theory of programming in X Windows. Topics include event-loops, 2D-drawing primitives, mouse-handlers, color, call backs, Xlib environment, Xt intrinsics, and widgets. Students use the University's computer laboratory facilities to run programs. *Prereq. CT 4330 and CT 4393 or equiv.*

CT 4475 Concurrent Engineering and Design Testability (4 QH) TBA

Studies techniques used by world-class manufacturers in designing electronic systems, boards, and devices. Examines how the systems are manufactured, tested, and maintained at minimum cost and delivered to market in the minimum time. Topics include concurrent engineering principles, digital and analog circuit design guidelines, commercially available microprocessors and support circuits, industry and government standards (IEEE 1149, MIL-STD 2165), and test techniques and strategies. *Prereq. CT 4355*.

CT 4480 Local Area Networks 1 (4 QH) Fall

Introduces Local Area Network concepts, architectures, application, protocols, and components. Focuses on the first three layers of the ISO reference model: physical, data link, and network layers. Examines Ethernet, SNA, Token Bus, Token Ring, and other IEEE standards. (Not open to students who have taken CT 4379.) *Prereq. CT 4380.*

CT 4481 Local Area Networks 2 (4 QH) Winter

Examines the upper four layers of the ISO reference model: transport, session, presentation, and application layers. Topics include TCP/IP, DECNET, NETBIOS, FTP, TELNET, and E-MAIL. Prereq. CT 4480 or permission of the instructor.

CT 4492 Independent Study in Computer Technology (4 QH) TBA

Independent study of advanced computer technology projects for students—usually in their junior or senior year—who have high scholastic standing. Projects may be of an applied or theoretical nature resulting in a formal report submitted to the project supervisor at the end of the quarter. *Prereq. Permission of adviser and project supervisor.*

CT 4493 Independent Study in Computer Technology (4 QH) TBA

Independent study of advanced computer technology projects for students—usually in their junior or senior year—who have high scholastic standing. Projects may be of an applied or theoretical nature resulting in a formal report submitted to the project supervisor at the end of the quarter. *Prereq. Permission of adviser and project supervisor*.

Economics

ECN 4115 Economic Principles and Problems 1* (3 QH) All Quarters

Applies the basic principles of economics to current public problems. Focusing on macroeconomics, explores the issues of unemployment, inflation, national income and employment theory, and government expenditures and taxation. *Prereq. None.*

ECN 4116 Economic Principles and Problems 2* (3 QH) All Quarters

Continues ECN 4115, focuses on the role of the banking system, the Federal Reserve System, and supply-side policies. Topics in microeconomics include the role of a market pricing system, supply and demand, the costs of production, profits, and the supply decision. *Prereq. ECN 4115 or equiv.*

Electrical Engineering Technology

EET 4124 Circuits Laboratory 1 (3 lab, 2 QH) Winter

Involves experiments in DC electrical circuits and the study of various measurement techniques. Includes use of ammeters, ohmmeters, voltmeters, VOMs, and power supplies. Studies equivalent resistance, series and parallel circuits, Ohm's Law, Thevenin and Norton Theorems, as well as superposition and maximum power transfer theorems. *Prereq. EET 4151*.

^{*}This is a University College course offered at a different tuition rate.

EET 4125 Circuits Laboratory 2 (3 lab, 2 QH) Spring

Offers further experimentation in electrical circuits and measurement techniques. Involves the operation of oscilloscopes, audio frequency and function generators. Explores inductance, capacitance, and the effect of frequency upon them. Studies measurements of amplitude, frequency, and phase shift using a variety of series/parallel RL, RC, and RLC circuitry. Examines circuit time constants and their relation to repetition rate, along with resonance, circuit quality, and filter circuits. *Prereq. EET 4124*.

EET 4151 Circuit Analysis 1 (4 QH) Fall, Spring, Summer

Introduces Ohm's law, Kirchoff's current and voltage laws, equivalent resistances, independent and dependent sources, mesh and nodal analysis, and power relations, all concentrating on direct current circuits. Other topics include Thevenin and Norton theorems, the operational amplifier, and energy storage elements such as the capacitor and inductor. *Prereq. MTH 4120 or PHY 4119.*

EET 4152 Circuit Analysis 2 (4 QH) Fall, Winter, Summer

Studies the time domain (transient) analysis of R, L, and C elements; the energy storage in L and C circuits; and the responses in source-free RL and RC circuits. Includes the application of the unit step function and the response of RLC circuits. Introduces frequency domain methods to solve sinusoidal steady-state circuits using complex frequency concepts and phasor algebra. Also covers three-phase circuits and three-wire single-phase systems. *Prereq. EET 4151*.

EET 4180 Introduction to Telecommunications (4 QH) Fall

Introduces students to voice, video, and data communications. Surveys the development of telephony and the operation of the telephone network. Emphasizes current developments in communications, particularly the use of digital transmission and switching. Introduces terminology peculiar to telephony. (Not open to electrical engineering technology majors.) *Prereq. None.*

EET 4310 Electrical Measurements (4 QH) Spring

Examines standards of measurements, dimensional analysis, errors and measurements of dispersed data, discrete and continuous variables, binomial distribution, and normal distribution. Other areas include guaranteed error, methods of resistance measurements, digital voltmeters and analog to digital conversion, voltage references, potentiometers, and AC bridges. *Prereq. EET 4152*.

EET 4311 Electronics 1 (4 QH) Fall, Summer

Introduces elements of digital electronics, from the binary number system to Boolean algebra and DeMorgan's theorems. Discusses combinatorial logic and the basic circuitry to realize AND, OR, and NOT devices. Presents sequential logic and the bistable devices required to realize it. Explores the basic sequential circuits such as counters and shift registers. Includes analysis and design of both combinatorial and sequential circuits. *Prereq. EET 4152*.

EET 4312 Electronics 2 (4 QH) Winter, Summer

Reviews the theory of linear circuits and extends it to simple nonlinear circuits of both two- and three-terminal varieties. Considers the solid-state theory of the PN diode as an example of the two-terminal nonlinear device, and the NPN, PNP, and field-effect devices as examples of the three-terminal nonlinear element. Includes light-sensitive and heat-sensitive solid-state devices. Considers the problem of selecting an operating point for a nonlinear device, and the corresponding practical methods of providing the required biases. Introduces the small-signal linear model for the nonlinear device in the vicinity of the operating point. *Prereq. EET 4152 and PHY 4119*.

EET 4313 Electronics 3 (4 QH) Fall, Spring

Reviews small-signal models for three-terminal devices and discusses frequency response of such models, including the db versus log frequency plots of Henrick W. Bode. Examines operational amplifiers, including their ideal behavior and the limitations introduced by finite input and output impedances, finite gain, and finite bandwidth. Explores feedback and the stability problems that it introduces. Studies applications of feedback to oscillators and active filters design. *Prereq. EET 4312*.

EET 4314 Pulse and Digital 1 (4 QH) Fall

Reviews the basics of Boolean algebra, combinatorial logic, and binary arithmetic. Extends these concepts to the design of coding systems such as binary, binary-coded decimal, Gray code, seven-segment displays, and multiplexers. Introduces flip-flops and sequential logic circuits such as ripple counters, synchronous counters, ring counters and Johnson counters, shift registers, solid-state memory devices, and the 555 timer. Emphasizes digital systems design using available microelectronic gates, primarily in the TTL series. *Prereq. EET 4313*.

EET 4315 Pulse and Digital 2 (4 QH) Winter

Examines the physical devices used to realize digital circuits, as a complement to the previous treatment of idealized mathematical models. Introduces the concepts of rise-time, fall-time, set-up time, hold-time, delay-time, and the maximum frequency of a clock. Contrasts the presently available logic families such as TTL, CMOS, and EC, and considers interconnection problems. Introduces memory elements and field-programmable logic elements. Presents interfacing devices such as analog-to-digital and digital-to-analog converters. *Prereq. EET 4314*.

EET 4317 Principles of Communication Systems 1 (4 QH) Fall 1995

Introduces signal analysis using Fourier methods; noise in communication systems; frequency selective amplifiers, including wideband; transistor power amplifiers AF and RF; oscillators; signal sources; and applications. *Prereq. EET 4313.*

EET 4318 Principles of Communication Systems 2 (4 QH) Winter 1996

Explores the basic theory of amplitude, frequency, phase, and pulse code modulated systems; analysis of modulating and demodulating circuits; carrier systems using SSB; system block and level diagrams; logic control circuits in communication systems; and modems. *Prereq. EET 4317*.

EET 4319 Principles of Communication Systems 3 (4 QH) Spring 1996

Presents the fundamentals of digital communications; sampling requirements; analog-to-digital conversion methods; system capacity and bandwidth; comparison of practical digital systems PAM, PCM, PFM, and PWM; time and frequency division multiplexing; data decoding; and selected examples from telemetry and computer links. *Prereq. EET 4318*.

EET 4320 Electricity and Electronics (4 QH) Winter

Introduces students to circuit analysis, resistive networks, periodic excitation functions, steady state AC circuits; study of the physical foundations of electronics and the physical operation of electronic devices. (Not open to electrical engineering technology majors.) *Prereq. MTH 4120 and PHY 4119*.

EET 4323 Electronics Laboratory (3 lab, 2 QH) Spring

Offers experimentation with nonlinear semiconductors. Explores junction and zener diodes. Studies typical applications in clippers, clampers, rectification, filtering, electronic power supplies, voltage regulation, and integrated circuit regulators. Discusses bipolar and field effect transistors, amplifiers and voltage follower configurations, special semiconductors and operational amplifiers. *Prereq. EET 4311*.

EET 4327 Advanced Electronics Laboratory 1 (3 lab, 2 QH) Fall

Includes experiments using oscilloscopes and examines transistor audio amplifiers, push-pull amplifiers, drivers, pulse and video amplifiers, transients and wave-shaping circuits, audio frequency oscillators, and operational amplifiers. *Prereq. EET 4323*.

EET 4328 Advanced Electronics Laboratory 2 (3 lab, 2 QH) Winter

Experiments with the modulation of a class C amplifier, the diode detector, basic timing circuits, RF and crystal oscillators, astable multivibrators, logic gates, flip-flops, binary adders, registers, and counters. Considers active filters, frequency modulation detectors, and analog-to-digital and digital-to-analog conversion. *Prereq. EET 4327*.

EET 4329 Advanced Electronics Laboratory 3 (3 lab, 2 QH) Spring

Involves spectral studies of FM and PM waves; amplitude limiters; the balanced modulators and single sideband generators; integrated circuit timers and monolithic random access memory; and monolithic phase-locked loop. Offers microwave experiments and a series of digital experiments. *Prereq. EET 4328*.

EET 4330 Energy Conversion (4 QH) Spring

Explores the generalized theory of rotating energy conversion devices; steady-state operation of the multiple-excitation of direct-current machines; control of speed; special machines; transformers; steady-state considerations of induction and synchronous machines; generalized machine and circuit model; and Laplace transform techniques applied to the analysis of dynamic operating modes of rotating machines. *Prereq. EET 4353.*

EET 4337 Distributed Systems (4 QH) Spring

Examines radiation, transmission, and reception of electromagnetic waves; distributed-line constants and traveling waves of transmission lines; and differential equations of the uniform line. *Prereq. MTH 4122 and PHY 4119.*

EET 4341 Power and Controls Laboratory 1 (3 lab, 2 QH) Fall 1994

Introduces standard laboratory measurement equipment, including voltmeters, ammeters, oscilloscopes, and frequency counters, as well as data-taking methods and report writing. Investigates diodes, bipolar transistors, field effect devices, silicon control rectifiers, unijunction transistors, power supplies, regulators, and various types of feedback transistor amplifiers. *Prereq. EET 4330*.

42

EET 4342 Power and Controls Laboratory 2 (3 lab, 2 QH) Winter 1995

Offers experiments with characteristics of DC motors and generators, single- and multi-phase transformers, induction motors, synchronous motors, and three-phase power measurements. *Prereq. EET 4341*.

EET 4343 Power and Controls Laboratory 3 (3 lab, 2 QH) Spring 1995

Offers experiments with self-synchronous devices such as control transformers, transmitters and receivers, AC and DC servomotors, and open and closed loop response of servomechanisms and stepping motors. *Prereq. EET 4342*.

EET 4353 Circuit Analysis 3 (4 QH) Fall, Spring

Examines the application of differential equations to the solutions of linear, time-invariant electrical networks. Introduces singularity functions, convolution, and time domain transient analysis; network topology and duality; and the methods of transformation calculus and complex frequency concepts. *Prereq. EET 4152.*

EET 4354 Circuit Analysis 4 (4 QH) Winter, Summer

Covers signal analysis in the frequency domain; Fourier series; and Fourier and Laplace transform methods. Requires solving circuit problems using Laplace transforms and related theorems. *Prereq. EET 4353.*

EET 4360 Photovoltaic Technology (4 QH) TBA

Examines the theory, operation, installation, and monitoring of a photovoltaic power system. Topics include the physics of silicon photovoltaic cells: amorphous, polycrystalline, and single crystal. Lab included. *Prereq. EET 4311 and PHY 4119*.

EET 4362 Basic Power Systems 1 (4 QH) Fall 1994

Considers power transmission lines; line constants; current, voltage, and power relations; introduction to electric-power distribution loads, feeders, and substations; and application of matrices. *Prereq. EET 4354.*

EET 4363 Basic Power Systems 2 (4 QH) Winter 1995

Studies symmetrical and unsymmetrical faults; protective devices—application and coordination; power flow in electric circuits; steady-state power limitations of systems; and voltage regulation theory and application. *Prereq. EET 4362*.

EET 4364 Basic Power Systems 3 (4 QH) Spring 1995

Examines computer applications to power systems with emphasis on load-flow studies; and basic ideas of systems planning, short-circuit studies, and system stability. *Prereq. EET 4363*.

EET 4370 Digital Computers 1 (4 QH) Fall

Introduces the field of digital computer design. Topics include general computer organization, number systems and number representations, design characteristics of major computer units, and Boolean algebra applications to computer design. *Prereq. EET 4314.*

EET 4371 Digital Computers 2 (4 QH) Winter

Examines microprocessor architecture and organization. Studies the machine language and assembly coding of an industry-accepted microprocessor. Assigns an assembly language coding problem and analyzes a suitable topic from the current literature. *Prereq. EET 4370.*

EET 4377 Control Engineering 1 (4 QH) Winter

Analyzes linear servomechanisms under both transient and steady-state conditions. Topics include signal flow graphs and Laplace transforms used in the formulation of block diagrams, and transfer function. *Prereq. EET 4354 and MTH 4122.*

EET 4378 Control Engineering 2 (4 QH) Spring

Studies system stability, root locus techniques, treatment of Nyquist criteria, and Bode diagram methods for systems evaluation. *Prereq. EET 4377*.

EET 4381 Telecommunications Systems 1 (4 QH) Fall

Presents transmission system fundamentals, beginning with the development of the information to be transmitted in the form of voice, video, or data signals. Examines information transmission including baseband and multiplex systems. Stresses encoding analog signals into a digital format and multiplexing digital signals into the digital hierarchy. Also examines current digital transmission systems such as T-carrier, digital radio, and fiber optic systems. (Not open to electrical engineering technology majors.) *Prereq. EET 4152 or equiv.*

EET 4382 Telecommunications Systems 2 (4 QH) Winter

Introduces switching theory and practice, historical development, and circuit switching. Examines packet switching and the basics of traffic engineering. Considers time division versus space division switching, switching systems software, and digital switch architecture. (Not open to electrical engineering technology majors.) *Prereq. EET 4381*.

EET 4383 Telecommunications Systems 3 (4 QH) Spring

Continues EET 4381 and EET 4382 by examining networks comprised of switching and transmission equipments. Considers networks of particular interest to students, including the interaction between private (PABX or key systems) networks and the public (local telephone company) network. Discusses signaling systems that communicate between portions of the network. Involves developing a transmission level plan that will tie together the subject matter. (Not open to electrical engineering technology majors.) *Prereq. EET 4382.*

EET 4384 Video Communications (4 QH) Fall

Examines the television signal, synchronization, balancing and interleaving, cameras, transmitters and receivers, video cassette recorders, video discs, and cable networks. (Not open to electrical engineering technology majors.) *Prereq. EET 4151 (may be taken concurrently with EET 4384)*, *EET 4180*, and *PHY 4119*.

EET 4391 Basic Optics and Optical Systems Design (4 QH) Fall

Involves developing the basics of optical imaging in the Gaussian approximation and analyzing the various designs stemming from lens aberration, intent and forms of optical systems, and flux throughput. Presents the essentials of a wave description of light along with instrumental designs for exhibiting interference and diffraction. Assumes no previous background in optics. *Prereg. MTH 4108 and PHY 4119.*

EET 4392 Optoelectronics and Fiber Optics (4 QH) Spring

Presents an overview of the various elements and their characteristics utilized in optical communication systems—elements that generate light (lasers, diodes); modulate light (as in scanning or information encoding); transfer light (optical fibers); detect light; and display and store light or its encoded information. *Prereq. EET 4393 and MTH 4108.*

EET 4393 Applied Wave Optics (4 QH) Winter

Offers a wave optical approach to classical and modern imaging, and to interference/diffraction instrumentation and devices. Emphasizes a physically descriptive analysis of such applications as non-diffractive interference effects (interferometers, interference filters, high and anti-reflection films, and longitudinal "laser" cavity modes) and diffraction effects (apertures and gratings). Also discusses wave imagery, image processing, and the 3-D imaging of holography; polarization phenomena and associated materials and devices; and basic quantum optics. Prereq. EET 4391, MTH 4108, and PHY 4119 or permission of instructor.

EET 4399 Special Problems in Electrical Engineering Technology (4 QH) TBA

Engages students in theoretical or experimental work under individual faculty supervision. *Prereq. Permission of department chair*:

English

ENG 4100 Critical Writing 1* (4 QH) All Quarters

(Formerly ENG 4110 3 QH.) Offers a detailed examination of the principles and methods of rhetoric, especially narration, description, and exposition. Includes frequent practice in writing paragraphs and themes in those modes. (Not open to students who have taken ENG 4110.) Prereq. A writing proficiency test is given at the first class meeting.

ENG 4110 Critical Writing 1 (3 QH)

This course has been replaced by ENG 4100 Critical Writing 1.

ENG 4111 Critical Writing 2* (3 QH) All Quarters

Further examines the principles and methods of rhetoric, especially persuasion and argument, the study of short fiction, and the development of research skills. Coursework includes practice in writing persuasive and critical themes and in preparing research papers. *Prereq. ENG 4100 or equiv.*

General Engineering Technology

GET 4100 Computer Programming for

Engineering Technology (4 QH) All Quarters Introduces computers for problem solving using C⁺⁺ Language. Topics include data types, arithmetic and logical expressions, programming loops, decision making, functions, arrays, and character string manipulation. Offers the use of the University's computer facility to run programs. *Prereq. MTH 4107 or concurrently.*

GET 4105 Computer Applications for Technology (4 QH) TBA

Allows students to learn the basics of computing in a microprocessor environment (DOS, Windows, Macintosh, word processing, databases, spreadsheet). Emphasizes applications relevant to technology students. Provides a foundation upon which to develop more extensive computer expertise. The skills acquired are directly transferable to subsequent courses, cooperative education assignments, and personal and professional endeavors. *Prereq. None.*

^{*}This is a University College course offered at a different tuition rate.

GET 4170 Engineering Graphics 1 (4 QH) All Quarters

Introduces the engineering design process. Explores freehand, instrument, and computer design and drawing techniques. Topics include engineering history, descriptive geometry, orthographic projection, cut sections, developments, and pictorial drawing techniques. *Prereq. None.*

GET 4171 Engineering Graphics 2 (4 QH) Fall, Winter, Spring

Introduces fundamentals of engineering design and analysis through architectural, mechanical, and electrical graphics. Explores graphic representation through manual and computer-aided design techniques. Topics include manufacturing and building processes, conceptual and detail design, problem solving, and patents. Requires a design project. *Prereq. GET 4170*.

GET 4306 Technical Communications (3 QH) Fall, Winter, Spring

Offers an opportunity to learn the style and content guidelines for technical writing, refines technical writing skills, and develops the ability to prepare and deliver oral presentations of a professional calibre. *Prereq. ENG 4100 or ENG 4110.*

GET 4356 Engineering Economy (4 QH) Fall

(Formerly IIS 4360.) Presents fundamental accounting concepts and terminology, including assets, liability, net worth, and the analysis of income statements and balance sheets. Discusses introductory steps in the analysis of investment proposals, time value of money, and cash flows. Analyzes cash flows in terms of present worth, annual worth, rate of return, and benefit/cost ratio. Considers depreciation and tax effects on cash flows. (Not open to students who have taken IIS 4360.) *Prereq. MTH 4107*.

GET 4364 Kinematics (4 QH) Fall

Presents the principles of kinematics through manual and computer methods to analyze and design mechanisms. Topics include four bar linkage, slider cranks, cams and followers, and gears and gear trains (reverted and epicyclic). *Prereq. GET 4171 and PHY 4117*.

GET 4393 Engineering Probability and Statistics (4 QH) Winter

(Formerly IIS 4393.) Studies the algebra of events and sets, and the laws of probability. Examines the properties of discrete and continuous random variables, including density function, expected value, variance, conditional probability, independent event, and Bayes' theorem. Presents common distributions: normal, uniform, and binomial. Also covers estimation of parameters of random variables, point estimation, confidence intervals, sampling statistics, central limit theorem, and associated sampling distributions. (Not open to students who have taken IIS 4393.) *Prereq. MTH 4122*.

Human Resources Management

HRM 4301 Organizational Behavior* (3 QH) Fall

Examines the fundamentals of organizational life, emphasizing the structure and discipline of groups typically found in a business setting. Topics include issues and data related to leadership styles, employee motivation, and organizational dynamics. Significant student participation is required. *Prereq. None.*

Industrial Engineering Technology

IIS 4360 Engineering Economy

This course's number has been changed to GET 4356.

IIS 4393 Engineering Probability and Statistics This course's number has been changed to GET 4393.

Industrial Management

IM 4301 Introduction to Operations Management This course's number has been changed to OM 4301.

IM 4314 Productivity Enhancement and Quality This course's number has been changed to OM 4314.

Management

MGT 4101 Introduction to Business and Management 1* (3 QH) All Quarters

Studies the setting and general structure of American business, including objectives and practices affecting standard of living. Examines characteristics of private enterprise and the nature and challenge of capitalism and other forms of economic enterprise. Introduces business types, organization structure, and management functions. Examines what a managerial career involves including problem solving and decision making. *Prereq. None.*

^{*}This is a University College course offered at a different tuition rate.

Management Science

MS 4332 Statistical Quality Control* (3 QH) Fall

Introduces statistical process control (SPC) and acceptance sampling used in quality control and quality assurance of products or services. Includes control charts for attributes and variables data, process capability analysis, statistical tolerancing, and acceptance sampling concepts and sampling plans for attributes. *Prereq. ECN 4251 or equiv.*

Manufacturing Engineering Technology

MFG 4311 Manufacturing Materials and Processes 1 (4 QH) Spring

Examines the structures of polymers (thermoplastics, thermosetting, glass, and rubber); manufacturing processes for polymers; thermoforming; structures of metals; and the manufacturing processes for metal forming. Also covers alloys, nonferrous metals, and various manufacturing methods and processes. *Prereq. CHM 4103 or CHM 4111, and PHY 4117.*

MFG 4312 Manufacturing Materials and Processes 2 (4 QH) Fall

Continues MFG 4311. Prereq. MFG 4311 or MET 4380.

MFG 4313 Modern Manufacturing Materials and Processes (4 QH) TBA

Covers advanced manufacturing processes and advanced manufacturing materials being utilized in industry. Topics include advanced forming techniques of materials, advanced coating methods of materials, advanced deburring techniques, advanced metal removal techniques, and advanced materials such as composites and ceramics. *Prereq. MFG 4312*.

MFG 4321 Computer-Aided Manufacturing 1 (4 QH) Fall

Gives an overview of computer-aided manufacturing (CAM), including group technology; material requirements planning; part coding and classification; numerical control; part programming; and management systems. Covers each area to instill an appreciation of the coming reality of the automated factory. *Prereq. None.*

MFG 4322 Computer-Aided Manufacturing 2 (4 QH) Winter

Continues MFG 4321. Prereq. MFG 4321.

MFG 4331 Computer Methods in Manufacturing Design 1 (4 QH) Fall

Investigates the use of computers in selected areas of manufacturing systems design. Topics include numerical control, MRP II, computer-aided process planning and control, and other important applications of computers to manufacturing. *Prereq. MFG 4311 and MFG 4322.*

MFG 4332 Computer Methods in Manufacturing Design 2 (4 QH) Winter

Continues MFG 4331; Prereg. MFG 4331.

MFG 4341 Introduction to Computer-Aided Design (4 QH) Winter

Introduces computational and numerical geometry for design, and studies the implementation of computer graphics in design and use of computer-aided design packages, as well as principles of numerical control techniques in design and manufacture. Involves a design project. *Prereq. GET 4100 or FORTRAN*.

MFG 4351 Assembly Automation (4 QH) Spring

Examines the field of automatic assembly; topics include automatic vibratory feeders, nonvibratory feeders, and the automatic orientation of parts to be fed. Also covers the economics of automatic assembly. Involves designing an automated assembly system if time permits. *Prereq. MFG 4322 and MFG 4332*.

MFG 4361 Numerical Controlled Machines (Basic) (4 QH) Fall

Begins with a week-long review of numerical controlled machines from material covered in MFG 4321 and MFG 4322. Provides an introduction to DNC and CNC systems followed by the study of numerical controlled machines and programming in the APT programming language. *Prereq. MFG 4322, MFG 4332, and MFG 4341*.

MFG 4371 Robotics (4 QH) Winter

Discusses the concept, classification, and structure of robots and their application in manufacturing. Topics include drive and control systems; kinetics, coordinate transformations, and trajectory interpolators; and the application, programming, and integration of robots into the manufacturing environment. *Prereg. MFG* 4361.

MFG 4381 Plant Layout and Design (4 QH) Fall

Examines the use of descriptive and optimizing models—for example, simulation, queuing theory, and linear programming—to design facilities and associated material handling systems. Applies computer-assisted layout analysis techniques to practical problems. *Prereq. OM 4301 or IM 4301 and GET 4356 or IIS 4360.*

^{*}This is a University College course offered at a different tuition rate.

MFG 4385 TQM: ISO-9000 and Quality Management (4 QH) TBA

Introduces and focuses on the ISO-9000 Series Standards and the importance the standards play in helping to establish a basic management philosophy for quality assurance. Reviews the ISO-9000 Series in depth, with emphasis on implementation, meeting compliance requirements, achieving certification, and maintaining certification. Discusses the International Standards Organization, examines the emergence of quality as a strategic business consideration, compares quality awards and quality standards, and discusses what lies ahead for ISO-9000 and quality management. Prereq. OM 4314 or permission of faculty adviser.

MFG 4390 Special Topics in Manufacturing Technology (4 QH) TBA

Focuses on special or advanced topic areas that are of particular interest in the manufacturing area. *Prereq. Permission of the instructor or student faculty adviser.*

MFG 4391 Independent Study in Manufacturing Technology (4 QH) TBA

Offers theoretical and experimental work under individual faculty supervision. *Prereq. Student must obtain a course faculty adviser.*

MFG 4392 Special Problems in Manufacturing Technology (4 QH) TBA

Selected advanced problems in manufacturing technology chosen by the instructor. *Prereq. Permission of the instructor and student adviser.*

MFG 4393 Independent Study (4 QH) TBA

Selected advanced problems in manufacturing technology chosen by the instructor. *Prereq. Permission of the instructor and student adviser.*

Mathematics

MTH 4006 Technical Mathematics (4 QH) All Quarters

Reviews high school algebra equations, formulas, exponents, polynomials, factoring, scientific notation, fractions, radicals, quadratic equations, and linear equations and their applications. Students are required to purchase a TI-85 graphing calculator or equiv. (Credit cannot be used in the associate in engineering, associate in science, or the bachelor of science in engineering technology degree programs.) *Prereq. None.*

MTH 4107 College Algebra (4 QH) All Quarters

Examines laws of exponents, factoring, operations with fractional expressions, radical and complex numbers, Pythagorean theorem and distance formula, linear and quadratic equations and inequalities, and functional notation. Includes graphing of a wide variety of functions and equations including lines, conic sections, and polynomials. Studies solutions to many types of equations including linear, quadratic, and polynomial. Also explores many applications of algebra. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH 4006 or equiv. in high school algebra*.

MTH 4108 Pre-Calculus (4 QH) All Quarters

Studies exponential and logarithmic functions, trigonometric functions of angles in degrees and radians, trigonometric identities and equations, right triangles, law of sines and cosines, inverse trigonometric functions, and polar coordinates. Examines complex numbers in trigonometric form, systems of linear and nonlinear equations, binomial theorem, arithmetic, and geometric sequences and series. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH 4107*.

MTH 4120 Calculus 1 (4 QH) All Quarters

Studies general function operations, theory and evaluation of limits, derivatives of algebraic and trigonometric functions, general rules of differentiation, Rolle's theorem, and Mean Value theorem. Also covers application of differentiation including velocity; and acceleration, related rates, maximum, minimum, curve sketching, and approximations by differentials. Examines antiderivative as an introduction to integration. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH 4108*.

MTH 4121 Calculus 2 (4 QH) All Quarters

Examines the Riemann sum and the development of the fundamental theorem with applications to areas, volumes, and rectilinear motion problems. Topics include logarithmic exponential and inverse trigonometric functions and their applications; techniques of integration including parts, partial fractions, substitution, and the use of tables; numerical integration (Simpson's and Trapezoidal rules); L'Hopital's rule; improper integrals; and geometry of vectors in a plane and space. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH 4120*.

MTH 4122 Calculus 3 (4 QH) All Quarters

Studies sequences and series to the development of Taylor and Maclaurin series, three-dimensional space, and a treatment of functions of several variables; multiple integrals with applications in areas and volumes; and differential equations, including the solution with applications of first-order with variables separable, first-order linear, and second-order linear homogeneous to complete the sequence. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH* 4121.

MTH 4123 Differential Equations (4 QH) Fall, Winter, Spring

Examines linear differential equations with constant coefficients, homogeneous and nonhomogeneous. Explores the variation of parameters and undetermined coefficients and simultaneous differential equations, the Laplace transform, series solution of differential equations, and the Fourier series. Studies orthogonal functions and numerical solutions of differential equations. Students are required to purchase a TI-85 graphing calculator or equiv. *Prereq. MTH 4122*.

Mechanical Engineering Technology

MET 4301 Mechanics A (4 QH) Fall

Studies the forces, moments, couples, and statics of particles and rigid bodies in two and three dimensions. Examines external and internal distributed forces, first moments and centroids, as well as structure-trusses, frames, and machines. *Prereq. MTH 4120 and PHY 4117*.

MET 4302 Mechanics B (4 QH) Winter

Explores friction and moments of inertia; the kinematics of particles; force, mass, and acceleration; work and energy. *Prereq. MET 4301*.

MET 4303 Mechanics C (4 QH) Fall

Studies the impulse and momentum of particles; the kinematics of rigid bodies, force, mass, and acceleration; and the dynamics of rigid bodies. Also covers introduction to mechanical vibration. *Prereq. MET 4302.*

MET 4314 Stress Analysis A (4 QH) Winter, Spring

Examines axially loaded members, stress and strain, allowable stresses, factor of safety, temperature effects, and indeterminate members. Other topics include shear and moment diagrams; flexural and transverse shearing stresses in beams; torsional stresses and deformations; and power transmission. *Prereq. MET 4301*.

MET 4315 Stress Analysis B (4 QH) Fall, Spring

Presents determinate and indeterminate beam deflections and reactions by various methods, including integration and moment-area and superposition methods. Topics include thin-walled pressure vessels and centric loading of bolted and welded connections; eccentric loads on beams and riveted and welded joints; combined stresses; principal stresses; Mohr's circle; theories of failure; and column design. *Prereq. MET 4314*.

MET 4319 Mechanics (4 QH) Spring

Provides an introduction to mechanics for non-mechanical majors. Studies the static analysis of forces acting on particles and rigid bodies in 2- and 3-dimensions. Also discusses centroids and centers of gravity and moments of inertia. Considers the kinematics and kinetics of particles and rigid bodies. *Prereq. MTH 4120 and PHY 4117*.

MET 4330 Mechanical Design A (4 QH) Winter

Introduces the principles of mechanical design, the design process, design factors, creativity, optimization, human factors, and value engineering through simple design projects. Examines principles of design, properties, and selection of materials; stress concentrations; strength under combined stresses; theories of failure; impact; and fluctuating and repeated loads. *Prereq. MET 4314 and MET 4380.*

MET 4331 Mechanical Design B (4 QH) Spring

Continues MET 4330 and further develops the methodology of design as applied to products, processes, and equipment. Also studies the deformation and design of fasteners, screws, joints, springs, and bearings, lubrication, and journal bearings. Covers stresses and power transmission of spur, bevel, and worm gear; shaft design, and clutches and brakes. *Prereq. MET 4330*.

MET 4340 Thermodynamics A (4 QH) Winter

Introduces the general theory of heat and matter; first law of thermodynamics for open and closed systems (law will be applied to nozzles, turbines, compressors, and heat exchangers); energy-transformation principles and availability of energy; and properties and processes for pure substances, liquids, and ideal gases. Also covers thermodynamic properties using tables and charts; mixtures of fluids; and vapor cycles. *Prereq. CHM 4103 or CHM 4111 and PHY 4118*.

MET 4341 Thermodynamics B (4 QH) Winter

Discusses the second law of thermodynamics for open and closed systems; internal combustion engines; design and performance of steam and gas turbines; gas power cycles; vapor and combined power cycles; cogeneration cycles; and refrigeration cycles. *Prereq. MET 4340.*

MET 4342 Refrigeration and Air-Conditioning (4 QH) Spring

Introduces air-conditioning principles, including psychometrics and heat pumps. Topics include calculation of heating and cooling loads in accordance with ASHRAE practices; principles of gas compression; analysis of vapor compression; refrigeration systems; low-temperature refrigeration cycles; and absorption refrigeration systems. *Prereq. MET 4341*.

MET 4343 Heat Transfer (4 QH) Fall

Presents the basic principles of heat transfer: thermal conductivity and thermal conductance/resistance. Examines heat transfer mechanisms, the basic equations of conduction, and natural and forced convection. Other topics include the radiation between simple bodies, heat transfer coefficients, heat exchanger effectiveness, and regenerative and evaporative heat exchangers. *Prereq. MET 4341*.

MET 4370 Fluid Mechanics A (4 QH) Spring

Examines hydrostatics; principles governing fluids at rest; pressure measurement; hydrostatic forces on submerged areas and objects; simple dams; fluids in moving vessels, and hoop tension. Discusses fluid flow in pipes under pressure; fluid energy, power, and friction loss; Bernoulli's Theorem; and flow measurement. *Prereq. MET 4302*.

MET 4371 Fluid Mechanics B (4 QH) Winter

Considers pipe networks and reservoir systems, flow in open channels, and uniform flow. Also covers energy, friction loss, minor losses, velocity distribution, alternate stages of flow, critical flow, nonuniform flow, accelerated and retarded flow, and hydraulic jump and waves. *Prereg. MET 4370*.

MET 4380 Materials A (4 QH) Spring

Identifies methods of selection of materials for engineering applications. Topics include fundamental metallic, ceramic, and polymer structures; general information covering theoretical aspects of properties; testing and failure of materials; alloying and hardening of metals; refinement of metals; equilibrium diagrams; characteristics of engineering metals; and introduction to principles of metal fabrication. *Prereq. None.*

MET 4388 Measurement and Analysis 1 (2 CH, 1 lab, 3 QH) Fall

Discusses theory and experiments requiring collection and analysis of data by graphical and numerical methods. Examines computer applications and report writing to conclude accuracy, precision, true values, and measured values as they relate to basic mechanical measuring instruments. (Not open to students who have taken MET 4390.) Prereq. GET 4100, MET 4314, MTH 4122, and PHY 4119.

MET 4389 Measurement and Analysis 2 (2 CH, 1 lab, 3 QH) Winter

Continues MET 4388 with additional classes and laboratory experiments in the fundamentals of mechanical engineering measurements. (Not open to students who have taken MET 4390.) *Prereq. MET 4388*.

MET 4390 Measurement and Analysis Laboratory (3 lab, 2 QH)

This course has been replaced by MET 4388 Measurement and Analysis 1 and MET 4389 Measurement and Analysis 2.

MET 4391 Mechanics Laboratory (3 lab, 2 QH) Spring

(Formerly Technology Laboratory A.) Conducts experiments to determine mechanical properties of materials under normal and abnormal environmental conditions. Experiments include tension, bending, torsion, creep, and fatigue. *Prereq. MET 4315, MET 4380, and MET 4389 or MET 4390.*

MET 4392 Fluid Mechanics Laboratory (3 lab, 2 QH) Winter

(Formerly Technology Laboratory B.) Conducts experiments to determine the physical properties of incompressible fluids, measure flow rates and velocities utilizing pitot tubes, orifice plates, venturii meter, and weirs flow meters, U-tube differential manometers, and piezometers. *Prereq. MET 4370 (may be taken concurrently) and MET 4389 or MET 4390.*

MET 4393 Thermal Analysis Laboratory (3 lab, 2 QH) Fall

(Formerly Technology Laboratory C.) Explores basic thermodynamic relationships. Conducts experiments to examine the flow of steam and to examine the energy conversion of a fuel into a working substance. Examines related heat transfer mechanisms along with operating characteristics of thermal generators, engines, and compressors. Evaluates internal combustion engines and their characteristics. *Prereq.*MET 4341 and MET 4389 or MET 4390.

MET 4395 Mechanical Projects Laboratory (3 lab, 2 QH) Spring

(Formerly Technology Laboratory E.) Offers advanced and specialized experiments in mechanical engineering topics. Includes group term project. *Prereq. MET 4342*, *MET 4343*, and *MET 4389* or *MET 4390*.

MET 4414 Mechanical Vibrations (4 QH) TBA

Studies the elements of vibrating systems, one degree of freedom, natural frequencies, and damped free and forced vibration. Presents design of vibration absorbers for industrial equipment. Requires a design project and lab experiments. *Prereq. MET 4303*.

MET 4416 Stress Analysis C (4 QH) TBA

Discusses curved beams, nonsymmetrical bending of beams, shear center and shear stresses on thin sections, and composite beams. Also covers columns, energy absorption and resilience, inertial stresses, impact loading, deflection of beams by energy methods, and bolted fastenings. *Prereq. MET 4315*.

MET 4444 Power Generation (4 QH) TBA

Explores electrical power generation by thermomechanical, electromechanical, nuclear, and hydraulic systems. Emphasizes the analysis of thermodynamic cycles as well as the practical deviations from the related ideal processes. Considers accessory and auxiliary equipment used in such systems. Studies design, performance, economic factors, and public issues affecting electric power generation. *Prereq. MET 4341*.

MET 4481 Materials B (4 QH) Spring

Discusses polymer, composite, and ceramic materials; electrical and magnetic properties; and applications for the fabrication and use of both metals and non-metals. Examines structures of metals, imperfections, and properties of nonferrous metals. Discusses fabrication methods including powder metallurgy, metalworking, casting, molding, machining, welding, and manufacturing methods. Offers experiments in preparation of samples and microstructure/analysis, and additional lab work in the construction of cooling curves and binary phase diagrams. *Prereq. MET 4380*.

MET 4482 Applied Metallurgy (4 QH) TBA

Examines mechanical properties of ferrous metals, the iron carbon diagram, high-temperature alloys, hardening methods, impact tests, and the effects of environment. Also discusses manufacturing processes and methods of fabrication. Offers experiments in heat treatment and surface corrosion, as well as ferrous and nonferrous metals. *Prereq. MET 4481*.

Operations Management

(Formerly Industrial Management: IM.)

OM 4301 Introduction to Operations Management* (3 QH) TBA

(Formerly IM 4301.) Presents concepts and principles related to operations from a managerial point of view. Examines relationships to other business functions. Explores operations as a transformation process, with inputs of materials, investment, and people producing finished goods and services. Topics include product and process design, forecasting demand, capacity planning, facilities design, aggregate planning, scheduling, and quality control and assurance. (Not open to students who have taken IM 4301 or IM 4401.) *Prereq. MS 4325*.

OM 4314 Productivity Enhancement and Quality* (3 QH) TBA

(Formerly IM 4314.) Explores the fields of quality control and productivity from managerial, technological, behavioral, and economic perspectives. Examines the practical improvement of operations. Introduces current productivity improvement programs including measurement and control. Reviews management practices of modern quality control and explores new approaches. Includes the economics of total quality, internal and external quality, and long-term quality and reliability management. (Not open to students who have taken IM 4314.) *Prereq. None.*

Physics

PHY 4101 College Physics 1 (4 QH) Fall, Summer

Introduces students to mechanics, including units of measurement, vectors, accelerated motion, and Newton's laws of motion. Topics include conservation of energy, work, momentum, elements of heat, mechanical waves, and vibrating bodies. Includes laboratory experiments and classroom demonstrations as an integral part of the course. (This course is intended for health professions and science programs and cannot be used for credit towards technology degrees in the School of Engineering Technology.) *Prereq. MTH 4107 or equiv.*

PHY 4102 College Physics 2 (4 QH) Winter, Summer

Introduces magnetism, magnetic fields, electromagnetic induction, electrostatics and electric circuits. Discusses appropriate topics in optics, nuclear and atomic physics. Involves frequent laboratory experiments and classroom demonstrations. (This course is intended for the health professions and science programs and cannot be used for credit towards technology degrees in the School of Engineering Technology.) *Prereq. PHY 4101*.

PHY 4117 Physics 1 (4 QH) All Quarters

Introduces vectors and balanced forces, accelerated motion, projectile motion, Newton's laws, work and energy, momentum, and equilibrium of rigid bodies. *Prereq. MTH 4107 or concurrently.*

PHY 4118 Physics 2 (4 QH) All Quarters

Explores rotational motion, periodic motion, electric forces and fields, electric potential, capacitance, electromotive force, and direct current circuits. *Prereq. PHY 4117*.

^{*}This is a University College course offered at a different tuition rate.

PHY 4119 Physics 3 (4 QH) All Quarters

Covers magnetic fields and forces, electromagnetic induction, inductance, Gauss's law, electromagnetic waves, mechanical waves, sound, and the interference and diffraction of light. *Prereq. PHY 4118*.

PHY 4196 Physics Laboratory 1 (1 QH) All Quarters

Includes experiments in acceleration, force, energy, and momentum that follow lecture topics in PHY 4117. *Prereq. PHY 4117 concurrently.*

PHY 4197 Physics Laboratory 2 (1 QH) All Quarters

Includes experiments in statics, rotation, and oscillation that follow the lecture topics in PHY 4118. *Prereq. PHY 4196 and PHY 4118 concurrently.*

PHY 4198 Physics Laboratory 3 (1 QH) All Quarters

Includes experiments in circuits, electromagnetism, and waves that follow the lecture topics in PHY 4118 and PHY 4119. *Prereq. PHY 4197, PHY 4118, and PHY 4119 concurrently.*

Northeastern University





A Profile of Northeastern

At Northeastern University, we value part-time evening and weekend students as highly as we do our full-time students. You are important members of the academic community and reflect the changing profile of today's college student, which encompasses new concerns for lifelong learning and professional retraining. Northeastern supports your pursuit of personal and professional goals and wants to contribute to your success. In return, you contribute to the intellectual and cultural diversity upon which this urban institution thrives. You take full advantage of the academic resources and facilities we offer and join all our students who are recognized and supported by the University's faculty and administration.

Founded in 1898, Northeastern University is incorporated as a privately endowed, nonsectarian institution. From its beginning, the University's mission is to identify and address the educational needs of a diverse community and student body in distinctive and useful ways. Northeastern did not duplicate the programs of other academic institutions, but instead became a world leader in new areas of educational service. Today, the University is comprised of seven undergraduate colleges and nine graduate schools. Our undergraduate colleges are:

- Bouvé College of Pharmacy and Health Sciences
- College of Arts and Sciences and School of Journalism
- College of Business Administration
- College of Computer Science
- College of Criminal Justice
- College of Engineering, including the School of Engineering Technology
- College of Nursing

Our graduate schools are:

- Graduate School of Arts and Sciences and School of Journalism
- Bouvé College of Pharmacy and Health Sciences Graduate School
- Graduate School of Business Administration
- Graduate School of Computer Science
- Graduate School of Criminal Justice
- Graduate School of EngineeringGraduate School of Nursing

- Graduate School of Professional Accounting
- School of Law

At Northeastern, we respond to the needs of people who already hold jobs or are launched in careers but who wish to advance or change their professional lives. There are also classes for people pursuing personal interests. The University offers a variety of educational options—both credit and noncredit—to suit your particular objectives. The School of Engineering Technology offers part-time evening and weekend associate's and bachelor's degree programs in technological areas, in addition to daytime undergraduate programs. University College, so named because it draws upon the resources of Northeastern's other colleges, offers part-time day and evening programs leading to certificates and to associate's and bachelor's degrees.

All formal courses of study leading to degrees through part-time programs are approved by the full-time day faculty of Northeastern's Basic Colleges and are governed by the same qualitative and quantitative standards.

Where You'll Find Northeastern

The main campus of Northeastern University is a vibrant and progressive urban community. To all Northeastern students, the physical setting of the Boston campus extends opportunities to participate in the dynamic, exciting environment that we share with city residents. Built around a quadrangle, the campus is divided by Huntington Avenue, a major artery. It is located in the midst of such cultural landmarks as Symphony Hall, the Museum of Fine Arts, the Isabella Stewart Gardner Museum, Horticultural Hall, and the Boston Public Library. You can walk to Frederick Law Olmsted's Fenway Park, Copley Place, the Back Bay shopping district, and a number of internationally renowned hospitals. In 1910, the University began construction on the first piece of land acquired at its present site; it is now more than fifty-five acres.

The Boston campus is ideally situated for easy commuting. The MBTA Orange and Green lines provide rail service to the heart of the campus. Use either the Orange Line's Ruggles Street station or the Green Line's Northeastern University stop along the Arborway Branch to arrive on campus. The MBTA also has numerous bus routes that run along Huntington and Massachusetts avenues, which are the two major city streets closest to the campus. Finally, if you drive to Northeastern, student parking is available at reasonable rates in University-owned parking lots.

To reach increasing numbers of students and to make participation in our programs as convenient as possible, Northeastern University has established a number of suburban campuses and branch locations, as well as several off-campus athletic facilities. The campuses and branch locations house administrative and classroom facilities for Northeastern's graduate, part-time day and evening, and continuing education programs. The University also maintains many affiliations to ensure access to facilities and specialized equipment available at other institutions and organizations.

One of Northeastern's most recent acquisitions is the twenty-acre Dedham campus, just north of Route 128. This facility houses the Center for Continuing Education and space for the College of Business Administration's High Technology MBA Program.

Near the junction of Routes 128 and 3 in Burlington is the Suburban Campus of Northeastern University. Part-time undergraduate courses in a variety of subject areas and part-time graduate courses in engineering and business administration are offered. The Burlington campus also offers special programs for part-time, evening, and noncredit continuing education courses.

Situated on 165 acres of wooded, lakeside land in Ashland, the Warren Conference Center offers meeting space for groups of up to 150 people. Overnight group retreats and special events can be held at the center. Recreational activities available to conferencing groups include tennis, swimming, volleyball, and soccer.

Twenty miles northeast of Boston, the Marine Science and Maritime Studies Center is located in Nahant, on Massachusetts Bay. It serves as a site for national, international, and University research.

Henderson House is located twelve miles from Boston in suburban Weston. This facility hosts a variety of activities, including residential seminars, workshops, short courses, and weekend meetings.

Network Northeastern

Network Northeastern uses the microwave-based Instructional Television Fixed Service (ITFS) system to broadcast courses to subscriber companies and to the Burlington and Dedham campuses. The network telecasts live classroom instruction to remote sites where students interact with instructors via a telephone-based talkback system. A courier service collects and delivers course materials and serves as the off-campus student's link to academic and administrative departments.

Network Northeastern currently broadcasts educational programs to over thirty local corporations. Courses are offered in graduate engineering, graduate computer science, undergraduate engineering technology, and state-of-the-art programs for professional development. Network Northeastern also delivers graduate level and short courses to corporations throughout the United States via satellite.

University Libraries

Together, the collections, services, staff, and facilities of the Northeastern University Libraries provide access to information and an understanding of the organization of the literature and other information resources of the academic disciplines. The library is integral to the academic and research processes, whether these occur in a formal classroom, seminar, or laboratory setting or through individual study and enrichment.

All students, whether full-time or part-time, have full access to all units of the University Libraries located on the Boston and Burlington campuses and at the Marine Science Center in Nahant.

Snell Library, a centralized library for the Boston campus, is open more than 100 hours each week that classes are in session. It has 2,800 seats on five levels and shelving for more than 1.25 million volumes. Library services incorporate online, telecommunication, and media technologies that are associated with

information resources, including an online catalog and circulation system, microcomputer and language laboratories, and a CD-ROM optical disc network.

Total holdings of the University Libraries include more than 770,000 volumes; 1,750,000 microforms; current subscriptions to over 8,700 serials and newspapers; 160,000 government documents; and 14,000 audio, video, and computer software titles.

Library staff are available in all service areas to assist students, including students with disabilities. Librarians provide instruction to groups and to individuals on the bibliographic research process and on strategies for identifying, locating, and using information resources. Each term, a series of tutorials is offered giving students further opportunities to meet with a librarian to discuss particular or specialized research needs.

Northeastern University is a member of the Boston Library Consortium, a cooperative arrangement among the following academic and research institutions: Boston College, Boston Public Library, Boston University, Brandeis University, Marine Biological Laboratory/Woods Hole Oceanographic Institution, Massachusetts Institute of Technology, Northeastern University, the State Library of Massachusetts, Tufts University, the University of Massachusetts (Amherst, Boston, Dartmouth, and Lowell campuses), and Wellesley College. The University's membership in the Boston Library Consortium generally allows for on-site use by, but does not grant borrowing privileges to, students at Northeastern. Some of the consortium libraries and many of the other libraries in the Boston area require that a visiting student present a special pass or letter of introduction. A Northeastern reference librarian can advise about such student visitor policies.

Engineering Computer Center

The Engineering Computer Center provides user support for Northeastern Engineering and Technology students and faculty. The staff are full-time professionals who administer the systems, deliver training, maintain hardware and provide software support. The center's labs, open seven days a week with competent user assistants available to answer questions, provide access to NUnet, a University-wide network, and Internet, a global network. These networks

provide access to software for educational and research application in a variety of engineering disciplines. The hardware is distributed among 486 PCs, Macintoshes, and UNIX workstations.

Division of Academic Computing

The Division of Academic Computing (DAC) facilitates the use of computers by Northeastern students and faculty.

The division's Personal Computing Initiative supports personal computing with negotiated discounts on hardware and software (available through the Northeastern Computer Store) and with advice, training, and assistance on personal computer use.

The division and its Computing Resource Center (CRC) maintain the *lymx* communication system for the exchange of computer mail and conference discussions. Participation in *lymx* is available to any member of the Northeastern community free of charge. To apply for a *lymx* account, bring a valid Northeastern student identification card to 39 Richards Hall during business hours.

The Computing Resource Center also maintains mainframe computing resources (most notably the VAX 8650 system) and numerous public-access laboratories of personal computers and terminals on the Boston, Dedham, Burlington, and Liberty Square campuses.

Ell Student Center

The Carl S. Ell Student Center is home to Northeastern's 185 student organizations—coordinated by the Student Activities Office—and such central facilities as the Student Government offices, the Information Center, *The Northeastern News*, the yearbook, WRBB radio station, and the food court. Supported by student fees, the center also houses a computer lab, meeting rooms, lounges, the Commuter Referral Office, and the ballroom, which serves many social and academic functions.

The Ell Center offers a comfortable setting for commuter and resident students and hosts many of the social, recreational, academic, and cultural activities held on campus. Currently, a major renovation of the Ell Student Center is underway, with a completion date anticipated by Fall 1995. The remodeled center will feature new food vending, additional seating, and an indoor quadrangle. Indoor balcony spaces overlooking events, performances, and activities in the quad will enhance student participation in the center.

Recreational Facilities and Programs

University College and School of Engineering Technology students have access to the Cabot recreational facilities and programs. These include pool, indoor track, three weight rooms, basketball courts, and stretching and light activities rooms. Intramural team and individual sports are also offered, including basketball, softball, volleyball, tennis, broom-ball, flag football, innertube water-polo, soccer, ice hockey, racquetball, and aerobic classes. To use the Cabot recreational facilities and programs, enrolled part-time students show part-time ID cards and their photo IDs. For more information, please call the Cabot Center at 617-373-4433.

Social and Professional Clubs

We welcome and encourage part-time students in the School of Engineering Technology and University College to join in the social and professional activities that are organized and run by the student body, with the assistance of the director of the Office of University College—School of Engineering Technology Student Activities. If you and your peers are interested in starting new professional clubs, the office will help to plan and organize locally and nationally.

All programs are designed to keep pace with changing student needs and interests and to provide maximum opportunity for your participation.

Disability Resource Center

The Disability Resource Center's (DRC) mission is to enable people with disabilities equal access to higher education via support services and advocacy. The center provides support services

on an individual basis. Accommodations include but are not limited to: orientation, quarterly registration assistance, counseling, referral, and HP parking.

Before receiving services, individuals must voluntarily register their disability-related needs with the DRC. Registering requires providing the DRC with recent diagnostic documentation of their disability. The center's services are individually designed to meet the student's needs.

The Counseling Center

Confidential counseling and testing is available to full- and part-time students to address career, educational, or personal concerns. Assistance is available to all students during days and one weekday evening until 8:30 PM at the Counseling Center. For information and appointments, call 617-373-2142 or drop in at 302 Ell Building.

Lane Health Center

A comprehensive program of medical care is provided to all students registered in full-time Basic Colleges and Graduate School programs at the Lane Health Center, 135 Forsyth Building. The medical staff is generally available Monday–Friday 9:00 AM–5:00 PM and a nurse is on duty at all times when the clinic is closed. An emergency telephone number (617-373-2772) is answered by the nurse on duty who will make appropriate arrangements for any urgent situation—nights, weekends, and holidays. Students are encouraged to schedule appointments at Lane Health Center.

Department of Career Services

The Department of Career Services provides a variety of professional development services to Northeastern students and alumni/ae. The services enable students to plan for career advancement. Students already working in their chosen fields may receive assistance in identifying career paths and developing a network of professional contacts. Others may receive assistance with career placement.

Services available to students and alumni/ae include career counseling, job search seminars, career expos, and resume matching. Students and alumni/ae may use the Career Resource Center, which contains valuable career planning material, a job bank of employment opportunities, the Northeastern National Career Network, and files on over 1,200 companies.

The On-Campus Recruiting program offers students receiving a bachelor's degree in the current academic year the opportunity to interview on campus with representatives of business, industry, government, and nonprofit organizations. Over 250 employers conduct interviews on campus during the fall and winter recruiting seasons.

The department is located on the Boston campus in 120 Ryder Hall. Counselors are available to students and alumni/ae by appointment. Office hours from September to June are 8:30 AM—4:30 PM Monday, Thursday, and Friday; and 8:30 AM—7:00 PM on Tuesday and Wednesday. Office hours during July and August are 8:00 AM—5:00 PM, Monday through Thursday. For further information or an appointment, call 617-373-2430 (voice), 617-373-2432 (TTY).

Cooperative Plan of Education

The University is known worldwide for its cooperative plan of education, under which students alternate periods of paid, professional work and study. Our time-tested, widely acclaimed method of education enables students to gain valuable hands-on, practical experience in their chosen fields as an integral part of their college programs. All of Northeastern's undergraduate day colleges operate on the cooperative plan, and several of the University's graduate schools have structured their programs to include the features of cooperative education.

Alumni Association

Upon graduation, you will join the more than 124,000 alumni united worldwide within the Alumni Association, which was established to promote a mutually rewarding relationship between Northeastern and its graduates. Association activities include the Homecoming celebration, NU Night at POPS, the Downtown Breakfast Club Series, Sons and Daughters of Alumni Reception, presentation of the Outstanding Alumni Awards, and the annual presentation of Professional Promise Awards to outstanding seniors in each of the colleges. Free Alumni Association Membership Cards provide access to University facilities. Call the association at 617-373-3186.

Administrative Information

Admissions

The Student Body

The student body of the School of Engineering Technology is composed of both recent high school graduates and adults. Most students are employed in industry, with a range of vocational experience. They represent many technical career categories—industrial, engineering, scientific, and allied-medical, demonstrating that, in our increasingly complex society, the key to personal advancement is education.

Academic Background

A firm knowledge of the fundamentals of mathematics and science is necessary for success in the more advanced technological courses.

All applicants to the School of Engineering Technology are required to be proficient in both English and mathematics. In order to enroll in ENG 4100 Critical Writing 1 or MTH 4107 College Algebra, you must satisfactorily complete an English and a mathematics skills test.

Students who lack the required English or mathematics skills must take the appropriate review course. In addition, students who feel uncomfortable with the level of their English or mathematics skills are encouraged to enroll in review courses as well. The next paragraphs describe the review courses available. The review courses are not for credit toward degree requirements.

ENG 4005, ENG 4006, and ENG 4007 English for International Students 1-3

This is a three quarter sequence of courses for non-native English speakers that provides intensive training in the English language. Students are introduced to English grammar, with an emphasis on listening, speaking, and writing. The preparation of written and oral reports, as well as business and social correspondence, is required. In the final quarter, advanced work in written and spoken English prepares the students for ENG 4100 Critical Writing 1.

ENG 4011 Elements of Writing

This is a writing course that reviews English grammar, and offers practice in writing sentences, paragraphs, and short papers. The course prepares students for ENG 4100 Critical Writing 1.

MTH 4006 Technical Mathematics

This is a mathematics course that reviews high school algebra and prepares students for MTH 4107 College Algebra.

Program Counseling

If you are attending the School of Engineering Technology for the first time, we recommend that you meet with a program counselor who will assist you in planning an academic program. (If possible, please bring school transcripts to the counseling session.) Counselors are available evenings and Saturdays at the main campus in Boston most of the year; a special schedule is prepared for the summer. Counseling at the Burlington, Dedham, and Marlboro campuses is available on selected evenings during the registration period prior to each quarter. For further information, contact the School of Engineering Technology at 617-373-2500.

Special Students

Our open enrollment policy allows you to enroll in courses without making a formal application. As long as you have the proper prerequisites or their equivalent, you can enroll as a special student.

Degree Candidates

To graduate from the School of Engineering Technology you must be accepted as a degree candidate in a program. An application for degree candidate status is available from the School of Engineering Technology office in Boston (120 Snell Engineering Center, 617-373-2500).

To declare a major, you must do the following.

- Complete sixteen quarter hours in the School of Engineering Technology degree program at a minimum cumulative quality-point average of 2.00 (a grade of C).
- 2. Present a high school diploma or its equivalent (GED).

Once your application for admission to a degree program is approved, a change of status will be recorded on your permanent record and any advanced standing credit will be posted.

Full-Time Students

In addition to the part-time programs described in this publication, the School of Engineering Technology offers full-time day cooperative education programs. Interested students can apply through the Office of Undergraduate Admissions, 617-373-2200.

Readmission

If you are a former student seeking readmission to the School of Engineering Technology, we suggest you schedule a meeting with a program counselor to determine how program changes may affect course requirements. We recommend that you bring a copy of your previous curriculum worksheet and a transcript.

Transfer Students and Advanced Standing Credits

If you are transferring from a community college, junior college, technical institute, or other college or university, you may transfer applicable credits toward the degree requirements of a program in the School of Engineering Technology.

If you are admitted with transfer or advanced standing credits from another institution, you must meet the requirements for admission as set forth under the regulations stated. (See "Degree Candidates," page 57.) Advanced standing in the School of Engineering Technology may be obtained by transfer of credits, proficiency examination, or by completing the College Level Examination Program (CLEP).

Transfer of Credits

You may receive, subject to the approval of the Academic Standing Committee, credits for academic work completed in other approved schools, colleges, or universities if the following criteria are met: the content of the course being submitted is equivalent to that of the corresponding School of Engineering Technology course; the grade achieved in the course submitted is C or higher; and the remoteness of the time of study does not negate its use as a prerequisite for an advanced course.

If you desire advanced standing credits by transfer, you must file a petition for transfer credit. You should ask the registrar of the institutions previously attended to mail an official transcript to the School of Engineering Technology, 120 Snell Engineering Center, Boston, Massachusetts 02115.

Proficiency Examinations

If you are a degree candidate in good academic standing and you do not meet all the criteria for the normal transfer of credits but are able to supply evidence of sufficient knowledge of a technical subject, you may petition for a proficiency examination. Knowledge can be demonstrated through job experience or by completing noncredit continuing education courses such as those offered by Northeastern's Building Design and Construction or State-of-the-Art programs. After paying the proficiency examination fee and demonstrating proficiency as indicated by the examination, you will receive advanced standing credit. For information on the limits set for proficiency examinations, contact the School of Engineering Technology, 617-373-2500.

College Level Examination Program

The School of Engineering Technology awards college credit under the College Level Examination Program (CLEP). This program is designed to enable individuals who have reached college-level education to demonstrate their achievement through testing and to received college credit applicable toward a degree program. (The examination measures basic proficiency in the arts and sciences.) After paying the exam fee and receiving a passing score, you will be awarded advanced standing credit. For further information, contact the School of Engineering Technology, 617-373-2500.

Registration

Selecting Courses During Registration

Courses offered by the School of Engineering Technology are listed in the "Course Descriptions" section of this *Bulletin*. (See page 33.) Part of each course's entry lists in which quarters the course is offered. Because most courses are not offered every quarter, you should plan your course load for the entire academic year, not just the next quarter. Academic counseling is available to help plan your course load for the year. If you need help, contact a School of Engineering Technology program counselor at 617-373-2500.

Guidelines for Registering for Electives

Many of the School of Engineering Technology's degree programs require the completion of electives. The electives give you the chance to explore topics beyond the core curriculum's scope or to gain expertise in a specific area introduced by the core courses.

There are three categories of electives: open, technical, and social science/humanities.

Open Electives

Any course is acceptable as an open elective except physical education, military science, and preparatory courses. An open elective may be either a three or a four quarter-hour course depending on your major.

Social Science/Humanities Electives

Social science/humanities electives are offered through University College and must be chosen from a list that is available from the School of Engineering Technology. Six quarter hours of the social science/humanities electives must be chosen from the communication studies (CMN) category for certain majors.

Technical Electives

Technical electives must be chosen from the list of suggested technical electives appearing at the end of the degree curricula. Students wishing to take an upper-level course that does not appear on the list must petition for permission before attending the class. Students should submit a proposed program of elective courses for approval by the program coordinator. Electives preferably represent a minor field of concentration consistent with personal career objectives.

Registration Periods

Official registration periods are scheduled for each quarter during the academic year. We strongly recommend that you register for courses during these periods. The registration dates, times, and locations are listed in the enclosed Fee Schedule and Academic Calendar.

Before the registration period begins, get a copy of the *University College and School of Engineering Technology Schedule* for the next quarter. The *Schedule* provides you with the meeting times and locations of the courses being offered during the next quarter. To get a copy of the *Schedule*, contact the School of Engineering Technology at 617-373-2500.

Changes in Registration

You can change the courses you are registered in by filing a course drop form at the registrar's office, 120 Hayden Hall, and then registering for the desired course. We suggest that you make these changes during the official registration period, if possible.

Cross-Registration

Basic College students registering for School of Engineering Technology part-time courses may do so only to clear deficiencies or to follow a program approved by the appropriate program coordinator. Basic College students may register for part-time courses only by completing the registration form available in the School of Engineering Technology office by the end of the first week of the quarter. You must not fill out any other part-time registration materials. Approval of the program coordinator must be obtained if the course does not appear on your approved program sheet. Approval from the Department of Cooperative Education is required if you take more than one course during a co-op term. Upon completion, approval, and submission of the registration form, you will be registered automatically for the course. If the course is a substitute for a day course, the latest grade received is considered for qualitypoint calculations. If you do not appear on the part-time roster you will not be admitted into the class unless you have an approved registration form. In all instances, Basic College students must adhere to the academic and administrative requirements of the School of Engineering Technology part-time course.

Part-time School of Engineering Technology students who have been enrolled at Northeastern University for one or more quarters are eligible to register for a limited number of Basic College day courses. This policy is designed to accommodate previous School of Engineering Technology students who have experienced employment changes that make it impossible for them to continue part-time studies. If you are eligible, you may register for eight quarter hours of day course credit per quarter for a maximum of three academic quarters. Since you will be a part-time evening student in Basic College courses, tuition, fees, student services, and space availability will be based on part-time rates and departmental policy. If you are interested, you must first determine if a specific course is offered in the University, complete the registration form in the School of Engineering Technology, and have the form approved in both the bursar's and registrar's offices. At this point the academic department will determine space availability.

Academic Standards

Campus Locations

All courses are offered at the main campus in Boston, with some courses available at the Suburban Campus, Burlington; Burlington High School; the Dedham Campus; and Marlboro High School. Refer to the "Campus Maps" section. (See page 81.)

Quarter Calendar

Northeastern University operates on a quartersystem calendar. All courses are evaluated in terms of quarter-hour credit. A quarter-hour credit is equal to three-fourths of a semesterhour credit.

Class Session

Classes at Northeastern are scheduled in different modules. In assessing quarter-hour weight for courses, the following statement applies: One quarter hour of credit is equal to approximately fifty minutes of instruction per week, plus two hours of individual study.

Coursework

Various methods of instruction will be used in the course of your studies: lectures, home assignments, class projects, laboratory work, irregularly scheduled quizzes, and formal examinations. In addition, you will complete midterm examinations in most courses and a final examination at the completion of all courses. You are responsible for fulfilling all the requirements of a course. In the event of absence, you must make appropriate arrangements for makeup with the instructor.

Attendance

Chronic absence from regularly scheduled sessions in any subject, for whatever reason, may seriously jeopardize your academic progress and status. You are expected to attend all sessions scheduled in your courses. Excessive absence during a quarter may be sufficient cause for the registrar to remove the course(s) from your schedule.

Withdrawal

Students who wish to withdraw from a course must complete a Course Drop Form, available from the registrar representative at any campus location. Ceasing to attend classes or notifying the instructor does not constitute official withdrawal from a course. Students who withdraw from a course prior to the end of the seventh week of a term (please refer to the specific deadline in each Schedule Guide) will have no record of the withdrawal on their transcripts. Students may withdraw from the beginning of the eighth week to the end of the week prior to final examinations but the withdrawal will be noted on their transcripts. No withdrawals will be allowed for any reason during the week that final examinations are given.

In addition, the registrar will withdraw you from a course if you do not attend the first three classes at the beginning of the quarter or the first two classes at the beginning of a summer term.

Grading Systems

You are required to maintain appropriate grades, quality-point average, and the quantitative credit requirements of your program to satisfy academic progress criteria and graduate from the School of Engineering Technology.

The following grading system is used. The numerical equivalent for each grade is in parentheses.

A	(4.000)	Outstanding attainment
A	(3.667)	
B+	(3.333)	
В	(3.000)	Good attainment
B-	(2.667)	
C+	(2.333)	
C	(2.000)	Satisfactory attainment
C-	(1.667)	
D+	(1.333)	
D	(1.000)	Poor attainment
D-		
F	(0.000)	Failure
I		Incomplete (letter-graded
		course)
L	_	Audit (no credit)
S	_	Satisfactory achievement in a
		pass-fail course; counts toward
		degree requirements
U		Unsatisfactory achievement in a
		pass-fail course
W	_	Course withdrawal
X	_	Incomplete in a pass-fail course
*	_	Grade not received

A general average of D is unacceptable and will not allow you to continue in the School of Engineering Technology or to receive a degree from Northeastern University. If you receive an F, you can clear the failure by repeating and passing the course.

Pass/Fail Courses

If you are a *degree candidate* in good academic standing and have completed forty quarter hours in a School of Engineering Technology degree program, you may register for one pass/fail course. Thereafter, you may register for one course on a pass/fail basis for each ten quarter hours of successfully completed work up to a maximum of nine quarter hours of pass/fail credit. You must obtain written permission from the appropriate academic dean or designee and approval of the instructor. You may not register for more than one pass/fail course per quarter. Pass/fail courses are restricted to social science/humanities electives only.

If you are a *nondegree candidate*, do not intend to become a degree candidate, and are making good academic progress, you may register for a course on a pass/fail basis with written permission from the appropriate academic dean or designee and approval of the instructor. You may not register for more than one pass/fail course per quarter.

If you become a degree candidate, you may use only nine quarter hours of social science/humanities elective credit, where applicable.

Auditing a Course

You can audit courses by filing the usual registration forms and paying the regular tuition fees. There is no reduction in fees for auditing. Your decision to audit must be communicated in writing to the registrar prior to the fourth class meeting. As an auditor, you may participate in class discussion, complete papers and projects, and take tests and examinations for informal evaluation if desired. However, regardless of the amount or quality of work completed, no academic credit will be granted at any time for courses audited.

Makeup Examinations

Midterms

If you are absent from a midterm examination, you may request that your instructor grant permission to take a makeup examination; you do not automatically have the right to make up a missed examination. If permission is granted, arrange to have your instructor coordinate with you and the School of Engineering Technology a day and time for you to take the examination. All examinations will be administered on the Boston campus by the School of Engineering Technology office, 120 Snell Engineering Center, during regular office hours. There is no fee for a midterm makeup.

Finals

If you are absent from a final examination, you will receive a grade of I (Incomplete) for the course. You do not automatically have the right to make up a missed final examination; you must file a petition for a missed final according to the published schedule. Petitions may be obtained from the School of Engineering Technology office, 120 Snell Engineering Center, 617-373-2500. If the petition is granted, you must pay a fee before taking the special examination. (See enclosed Fee Schedule and Academic Calendar.)

You will be notified when and where to take the final examination; all are administered on the Boston campus. If you do not take makeup final examinations as scheduled, you will forfeit the makeup privilege.

Quality-Point Average

The quality-points you earn in a given course are determined on the basis of your letter grade and the credit hours carried by the course. The total quality-points earned, divided by the total number of credit hours, constitutes the quality-point average.

- When you receive more than one grade in the same course, the most recent grade will be used to calculate a quality-point average.
- 2. A grade of I (Incomplete) will not be considered in the final calculation.
- 3. If you are a transfer student, you can receive advanced standing credits (ASC) for work completed at other institutions. While these credits count toward completion of degree requirements, neither the credits nor the grades earned in such courses are included in quality-point averages.
- 4. In programs made up of combined University College and School of Engineering Technology courses, your cumulative quality-point average will include all work in both colleges.

For example, if you have registered for thirteen courses, cleared a failure in one of them, cleared an incomplete in another by repeating the course, and received advanced standing credit in another, you may calculate the quality-point average as follows.

Grade	Numerical	l	Credit	t	Quality
Achieved	Equivalen	t ×	Hours	=	Points
A	4.000	×	4	=	16.000
A-	3.667	×	3	=	11.001
B+	3.333	×	3	=	9.999
В	3.000	×	4	=	12.000
В-	2.667	×	2	=	5.334
C+	2.333	×	2	=	4.666
С	2.000	×	4	=	8.000
C-	1.667	×	3	=	5.001
D+	1.333	×	2	=	2.666
D	1.000	×	3	=	3.000
D-	0.667	×	2	=	1.334
F	0.000	×	2	=	0.000
FB	3.000	×	3	=	9.000
I	_	×	_	=	_
IC	2.000	×	2	=	4.000
ASC	-	×	-	=	-
	1	Tota	ls 39		92.001

$$QPA = \frac{Total \ Quality \ Points \ (92.001)}{Total \ Credit \ Hours \ (39)} = 2.359$$

The registrar cannot confirm calculations of quality-point averages. Each student's record is updated before graduation. In the meantime, borderline cases can be checked by a School of Engineering Technology counselor.

Grade Reports

The registrar's office will mail you a grade report that indicates both the quarterly quality-point average and the cumulative quality-point average. University regulations prohibit issuing grades by telephone.

Academic Progress Criteria

You are expected at all times to strive for a high record of achievement. The Academic Standing Committee reserves the right to review all students' records and deny readmission to those who fall below a minimum quality level of achievement. This requirement has been established as follows.

In order to remain in the college, you must have a quality-point average of at least: 1.40 at the completion of twenty-four quarter hours; 1.50 at the end of forty-eight quarter hours; and 1.60 at the end of seventy-two quarter hours.

If you accumulate the equivalent of six uncleared failures, you may be considered ineligible to continue your program of study.

Scholastic Probation

The Academic Standing Committee has the authority to dismiss from the school or to place on scholastic probation any student whose scholarship is deficient because of a low quality-point average or excessive outstanding failures, regardless of quality-point average.

A student on scholastic probation should be particularly diligent in current course work and make every effort to clear the academic deficiencies as soon as possible. Students whose academic records do not improve or whose failures are not properly cleared may not be allowed to register for further courses.

A student on scholastic probation who has cleared all or a substantial part of any outstanding failures may petition the Academic Standing Committee for removal from the probation list.

Disciplinary Probation

The Academic Standing Committee has the authority to dismiss from the school or place on disciplinary probation any student who is deemed unworthy because of conduct or character. The committee may ask any student to withdraw from the school who is obviously out of sympathy with its aims and ideals.

Graduation Requirements

To receive the degree of associate in engineering, associate in science, or bachelor of science in engineering technology, you must meet the following requirements.

- 1. Formal acceptance into degree candidate status by the Committee on Admissions.
- 2. Completion of all curriculum courses, either by attendance at the School of Engineering Technology or by receiving advanced standing credit.
- 3. Completion of associate degree programs within eight years and bachelor's programs within twelve years from the date of entrance into the School of Engineering Technology (extensions of time may be granted by the Academic Standing Committee).
- **4.** Attendance for at least a year preceding the expected graduation date, and completion of at least one-fourth of the work in the School of Engineering Technology.
- Maintenance of a minimum quality-point average of 2.00 in all courses in the major and a minimum overall quality-point average of 2.00.
- **6.** Completion of additional credit amounting to at least one-fourth of the total hours required to be awarded more than one associate or bachelor degree.
- 7. You must petition for transfer of credits completed at other institutions prior to January 1 of the year in which you are to receive the degree.

Academic and Professional Awards

The academic programs offered by the School of Engineering Technology and the teaching, counseling, and professional efforts of the faculty and staff are aimed at motivating you toward the highest levels of academic achieve-

ment. To encourage scholarly and professional excellence and to recognize quality achievements, the following awards are made at appropriate times during the academic year.

Dean's List Scholars

All matriculated students maintaining honor grade averages—a minimum quality-point average of 3.00 and no grades below C during a quarter, while carrying a minimum of eight quarter hours of credit—are recognized as Dean's List Scholars. If you want a certificate attesting to this honor, contact the School of Engineering Technology office.

Graduation with Honor

Bachelor's degree candidates who have superior achievement will be graduated with honor, high honor, or with highest honor, depending on the final quality-point average as follows.

Graduation with honor 3.25–3.49 Graduation with high honor 3.50–3.74 Graduation with highest honor 3.75–4.00

To be considered for graduation with honor, a student must have completed a minimum of 72 quarter hours of work at the School of Engineering Technology. Courses transferred from other educational institutions will not be considered in determining honor graduates.

Awards

Technology Awards

The Technology Awards are presented annually to seniors pursuing associate degree programs who have achieved high-ranking cumulative academic records. Certificates are awarded at the annual Class Day Ceremony.

University Awards

The University Awards are presented annually to seniors pursuing baccalaureate degree programs who have demonstrated superior academic and professional capabilities in their fields. Appropriate certificates are distributed to outstanding students enrolled in the following program categories.

Aerospace Maintenance Engineering Technology Computer Technology Electrical Engineering Technology Manufacturing Engineering Technology Mechanical Engineering Technology Mechanical-Structural Engineering Technology

Class Marshal Award

The Class Marshal Award is presented annually at the Class Day Ceremony to the top-ranking senior in a baccalaureate program. The award consists of a certificate and the President's Letter of Commendation.

Sigma Epsilon Rho Awards

This award is presented annually by Sigma Epsilon Rho, the evening colleges' scholastic honor fraternity. The highest-ranking students in University College and the School of Engineering Technology receive certificates and pins for outstanding scholastic achievement.

Tau Alpha Pi Awards

This award is presented annually by the Tau Alpha Pi National Engineering Technology Honor Society to recognize high scholastic achievement among students of the School of Engineering Technology. The award is intended to promote and encourage outstanding academic performance by offering membership in the society. Finally, the society hopes the award will strengthen the desirable qualities of personality, intellect, and character among its members. Inductees receive certificates and pins.

Alumni Award for Professional Promise

Established in 1947 by the Northeastern University Alumni Association, the Alumni Award for Professional Promise is presented annually at the Class Day Ceremony. The award is made to the senior who has demonstrated unusual professional promise through character traits, scholastic achievement, and professional performance.

Additional Opportunities at Northeastern

Educational Opportunities at Northeastern for Associate's Degree Graduates

Graduates of associate's degree programs in engineering technology or science technology programs may be able to transfer applicable credits toward the degree requirements of a baccalaureate program in engineering technology or operations technology at Northeastern.

For information about transferring associate's degree credits toward an engineering technology bachelor's degree, call the School of Engineering Technology, 617-373-2500. For information about transferring associate's degree credits toward an operations technology bachelor's degree, call University College, 617-373-2400.

In addition, engineering technology or science associate's degree graduates who maintained a quality-point average (QPA) of 2.75 may be able to transfer applicable credits toward a bachelor of science in engineering degree. For information, call the College of Engineering's student services office, 617-373-2154.

Educational Opportunities at Northeastern for Bachelor's Degree Graduates

Bachelor of science in engineering technology graduates who maintained a quality-point average (QPA) of 2.75 may be qualified to enter the College of Engineering's program leading to the bachelor of science in engineering degree. For information, call the College of Engineering's student services office, 617-373-2154.

Financial Information

Tuition and Fees

This section contains a brief description of the fees and charges that the University assesses for instruction or other services. The actual fee amounts are listed in the enclosed Fee Schedule and Academic Calendar. If you do not have a Fee Schedule and Academic Calendar, you can request one by calling 617-373-2500.

Tuition rates, all fees, rules and regulations, courses, and course content are subject to revision by the President and the Board of Trustees at any time.

Registration and Tuition Fees

As a new student, you will be charged a onetime, nonrefundable registration fee. This fee is included in your tuition bill.

Students are permitted to audit courses, but there is no reduction in fees for auditing.

You may not attend class sessions or take any examination until you have paid your tuition or have made satisfactory arrangements for payment.

You will not be advanced in class standing, nor permitted to re-enroll in the University, nor have degrees conferred until all financial obligations to the University have been met.

If you are assigned to courses in other departments or colleges of the University, you will be charged tuition and other fees effective in those departments.

Late Payment Fee

A late fee is assessed on all accounts for students who fail to make payments.

Refund of Tuition

The general tuition refund policy in all schools and colleges of the University is as follows.

The University provides instruction on a quarterly basis for which you must pay at the

beginning of each quarter. Tuition refunds are granted for official withdrawal from a course through the first four weeks of a quarter.

Tuition refunds are granted only on the basis of the date appearing on the official withdrawal application filed with the registrar, 120 Hayden Hall. *Nonattendance does not constitute official withdrawal*. Requests for refunds must be made through the Office of the Bursar, 254 Richards Hall.

Refunds will be granted in accordance with the following schedule.

Official withdrawal	
filed within	Percentage of tuition
1st week of quarter	100%
2nd week of quarter	75%
3rd week of quarter	50%
4th week of quarter	25%
5th week or later	0%

Tuition Underwritten by Employers

If tuition is being paid directly by your employer to the University, you should give the Office of the Bursar a purchase order or a statement from an officer of the company, certifying that the company is underwriting the tuition.

Many companies, however, do not pay the University directly but will reimburse employees upon successful completion of each course. In such cases, you are responsible for payment in full at the start of each quarter.

You may choose to pay in installments on the extended payment option. However, tuition may not be left unpaid pending employer reimbursement.

Failure to make payments in accordance with these regulations will result in a late payment fee.

If you have any questions about student accounts, please direct them to the student account bursar, 254 Richards Hall, 617-373-2270.

Student Center Fee

If you attend the main Boston campus in the evening in a part-time program of study, you will be assessed a nominal student center fee.

Parking Registration Decal Fee

If you park in the Boston or Burlington campus lots, you must obtain a parking registration decal by the beginning of the second week of the quarter. You may pay the fee at the cashier's office, 248 Richards Hall.

Medical Insurance

The Commonwealth of Massachusetts requires all Northeastern University students who are classified as full-time or enrolled in a degree program carrying nine or more credits to be covered by medical insurance. In compliance with the law, Northeastern University will automatically enroll you in its insurance plan and bill your student account for this coverage. The law allows you to waive the University's plan if you are covered by comparable medical insurance. Medical insurance waiver forms are available at the Bursar's Office, 254 Richards Hall.

Proficiency Examination Fee

Applicants may petition for advanced standing credit based on a "proficiency examination." There is a fee for each examination requested.

Transcript Fee

You can obtain a transcript at the registrar's office, 117 Hayden Hall. There is no charge for an unofficial transcript. The official transcript fee is payable in advance at the cashier's office, 248 Richards Hall. You must present a current picture identification card to obtain your transcript. Transcripts and other academic records will not be released until all financial obligations to the University have been met.

Textbooks and Supplies

You must purchase your own textbooks and work materials. The cost varies according to the subject. If you are enrolled in Engineering Graphics, you should be prepared to purchase drawing supplies and a set of drawing instruments, in addition to the textbook. If you are enrolled in a mathematics course, you should be prepared to purchase a graphing calculator, such as the TI-85, in addition to the textbook.

Financial Aid and Scholarships

The Office of Financial Aid, located at 356 Richards Hall, offers several types of assistance to part-time students. All awards are based on financial need. Aid granted from programs sponsored by the federal or state government is dependent upon the amount of funding allocated to Northeastern University. Federal regulations require that students who receive financial aid funds be United States citizens or permanent residents.

Application Procedure

All students applying for aid must submit a Free Application for Federal Student Aid (FAFSA) to the federal processor.

Federal regulations require that students submit a Financial Aid Transcript (FAT) from each school they have previously attended to the Office of Financial Aid before they can receive financial aid at Northeastern. This is required even if you did not receive aid at the other institution(s). If your transcript indicates you are in default on a loan or you owe a refund, you will be ineligible for all types of financial aid until this status is cleared.

Northeastern University also requires its students to complete an Institutional Application. This form gathers information that assists the office in determining a student's eligibility for aid.

All application materials are available at the Office of Financial Aid. Students should begin the application procedure at least twelve weeks before the start of the quarter in which they plan to enroll. Students must apply for financial aid each academic year.

In order to be eligible for financial aid, students must be admitted into a degree program prior to the beginning of the academic quarter. Students admitted after the start of the guarter will not be eligible for aid until the next academic quarter.

First-year students must submit a Letter of Provisional Matriculation from the School of Engineering Technology. A Letter of Provisional Matriculation is valid for one year. At the conclusion of the year, students must be officially admitted into a degree program in order to retain eligibility for aid.

Satisfactory Academic Progress

For all students who are receiving financial aid for the first time on or after July 1, 1987, satisfactory academic progress will be determined based on having achieved a 2.0 QPA after the completion of the second grade level and maintaining that minimum until completion of the degree. Students not achieving a 2.0 QPA or dropping below that minimum after their second grade level will not, by Federal law, be eligible for financial aid.

Financial Aid Programs

Financial aid to students is offered in the form of loans and grants. Available programs follow.

Federal Pell Grant

Based on a student's financial information, a student may be eligible for a Federal Pell Grant. The Federal Pell Grant Program is a federal aid program designed to provide financial assistance to undergraduate degree candidates. Approximately six weeks after a student has filed the FAFSA, the federal processor will send the student a Student Aid Report (SAR). The SAR must be submitted to the Office of Financial Aid to have a student's eligibility determined.

This program requires a student to be admitted into a degree program. If eligible for a Federal Pell Grant, the amount of the grant will vary depending upon the number of quarter hours a student enrolls in each quarter. Students with a prior bachelor's degree are not eligible to receive Federal Pell Grants.

State Scholarships

Based on financial information, a full-time student may be eligible for a state scholarship. When submitting the FAFSA, be sure to answer all questions regarding residency. Most states have application deadlines. Eligibility for state scholarships is based on need and is determined by the scholarship office in each state. Students will receive a letter from the state scholarship office notifying them of their eligibility. In order to be eligible for a state scholarship, a student must be admitted into a degree program and enrolled in at least twelve quarter hours per quarter. A student with a prior bachelor's degree is not eligible to receive a state scholarship. Contact your state scholarship office for more information.

Federal Stafford Loan Programs

Federal Stafford Loans are low-interest student loans available to students admitted to a degree program and enrolled on at least a half-time basis. Maximum loan levels are \$2,625 for the first year of study; \$3,500 for the second year; and \$5,500 for the third and subsequent years of undergraduate study. The maximum loan limit for undergraduate students is \$23,000.

In order to have a loan processed by the financial aid office, a student must have a complete financial aid application on file, have received a letter of eligibility from Northeastern, and have submitted a Federal Stafford Loan application. Applications for the loan are available from local lending institutions and the Office of Financial Aid.

Eligibility to participate in the **subsidized** Stafford Loan program is based on need in accordance with federal regulations. The federal government pays the interest on the loan while the student is in school. Repayment begins six months after enrollment falls below half-time.

Unsubsidized Stafford Loans are available to students who do not qualify financially for the subsidized loan. The unsubsidized loans are identical to the subsidized loans except that the federal government does not pay the interest on the loan while the student is in school. The student either makes regular interest payments or the interest is added to the loan's principal. Repayment begins six months after enrollment falls below half-time.

Repayment on loans may be deferred under certain circumstances. For details, contact your lender.

Students who borrow funds through this program must report any of the following changes to their lenders:

- withdrawal from school
- transfer to another school
- reduction of course load to less than half-time
- change of address or parents' address
- change of name

Additional information about financial aid is available from the Office of Financial Aid, 356 Richards Hall, 617-373-3190.

All federal financial aid programs are subject to change depending on adequate and continuing federal support.

Community Sources

Students and their families are urged to explore community, industrial, and foundation sources for collegiate financial aid. Parents' employers or the appropriate union organization may be a source. In addition, local, civic, political, religious, or educational leaders are often aware of aid sources in the immediate community. Some typical sources include PTA, Kiwanis, Lions, Elks, Knights of Columbus, Masons, Sons of Italy, Rotary, State Rehabilitation, or the American Legion.

Veterans' Benefits

Veterans covered by the Veterans Readjustment Act of 1966, Public Law 89-358, should report to 120 Hayden Hall to fill out the proper enrollment forms. Benefits depend on course load and increase sharply when a student takes more than eight quarter hours per quarter.

Students needing additional information about eligibility, allowances, or other details are urged to contact the local office of the Veterans Administration or the Veterans' Benefits Representative at 120 Hayden Hall, 617-373-2183.

Scholarships and Application Procedures

The School of Engineering Technology and University College scholarships and awards that follow are available to students who have been accepted as degree candidates and are in good academic standing.

Scholarships are awarded once a year by the Scholarship Committee. Final selection of scholarship recipients is usually made in late June, followed by the awarding of the scholarships in late July. Funds are usually applied to tuition expenses for the following academic year. Awards range in amount from \$500 to \$1,000.

In January, a mailing list of students who have requested applications is prepared, and applications are mailed out with the stipulation that they be completed and returned to the Scholarship Committee by March 31. To be placed on the January mailing list, call 617-373-2400 and leave your name and address.

Leslie B. Cutler Aviation Scholarship Awards

Established by the members of the Aero Club of New England in recognition of the late Senator Cutler's service and devotion to the interests of aviation, these awards are made to students who most typify the same interest, devotion, and leadership demonstrated by Senator Cutler during her long and distinguished public career.

Henry J. Doherty Memorial Scholarship Fund

Established in 1987 through the generosity of Doris R. Doherty as a tribute to her late husband, a 1953 graduate of the School of Business' evening program and a successful business leader in legal publishing. The income from the scholarship is awarded annually to deserving students with demonstrated financial need who are pursuing part-time evening study and have been accepted as degree candidates.

Kappa Tau Phi Scholarships

Granted annually to those women students in the arts and sciences, business, and engineering programs who rank highest at the end of the upper-middle year. If the chosen student is eligible for an award of greater monetary value, the award will be made to the next highest-ranking woman student. To be eligible for this scholarship, the student must be enrolled in a course that meets at least two evenings per week and must be a candidate for the bachelor's degree. In determining the recipient, grades of all courses completed in prior years shall be considered.

Robert G. Keene Memorial Scholarship Fund

Established in 1979 in memory of Robert G. Keene, a graduate of Lincoln College (now the School of Engineering Technology), Class of 1972, the endowment funds were provided by the friends and associates of Robert G. Keene and the Polaroid Corporation, where he served as an engineering manager. The income from the fund is awarded annually to an undergraduate in any college of the University who demonstrates financial need as well as strong character and initiative. Primary consideration will be given to children of Polaroid employees.

Martin Luther King, Jr., Scholarships Established in 1969 in memory of the late Rev. Martin Luther King, Jr., awards are made, as openings occur, to minority-group adults who would otherwise be unable to continue their education. Stipends will cover tuition expenses not to exceed six quarter hours in any academic quarter (excluding the summer quarter).

William J. McGovern Memorial Scholarship Established in 1978 by an anonymous donor who wishes to assist others in realizing their potential through higher education and to honor the memory of William J. McGovern. The income from this scholarship will benefit worthy undergraduate students actively pursuing studies in the School of Engineering Technology or University College. Recipients must be matriculated, demonstrate financial need and academic achievement, and exhibit a high level of professional promise.

Sigma Epsilon Rho Honor Society Scholarship Award

Established in 1974 by the membership of the society. Income from the fund is awarded annually to undergraduate student(s) of the School of Engineering Technology and/or University College at Northeastern University. Eligible students must have a cumulative quality-point average of 3.00 or better after completing 75 percent or more of the required studies.

H. Patricia Taylor Scholarship Fund Established in 1974 by H. Patricia Taylor, a graduate of University College, and her husband, Harry C. Taylor, a graduate of the School of Business, the scholarship expresses their appreciation for financial assistance made available to Mrs. Taylor while obtaining her degree, and is an attempt to provide similar funds to assist others in realizing potential through higher education. The income from the scholarship fund will be awarded annually to a student enrolled in University College or the School of Engineering Technology who demonstrates financial need and academic stability and who meets certain other conditions of eligibility.

University College and the School of Engineering Technology Faculty Society Memorial Scholarship Awards

The Faculty Society of University College and the School of Engineering Technology offer two awards annually, primarily for excellence in studies, to bachelor's degree candidates in University College and the School of Engineering Technology who have carried and are currently carrying a minimum of twenty-four quarter hours annually. Applications, available during the winter quarter, must be returned before the spring quarter. These awards are given in commemoration of the Faculty Society's deceased members.

Mark Caldwell Whitney Memorial Scholarship

Established in 1981 by the family and friends of the late Mark Caldwell Whitney, an outstanding 1973 graduate of aeronautical technology. Income from the fund is awarded annually to a student with financial need who demonstrates academic stability. Preference shall be given to students interested in the aviation field or who are preparing for careers in transportation.



Appendix







Faculty

A listing of the School of Engineering Technology's faculty follows.

David S. Goldman, MS, PE (CA, MA, NH) Associate Professor

Associate Professor Computer Technology

John E. Hajjar, PhD

Assistant Professor Computer Technology

Eric W. Hansberry, MS

Associate Professor Design Graphics

George F. Kent, MS, MBA, PE (CT, MA)

Associate Professor Mechanical Engineering Technology

Nonna K. Lehmkuhl, MEd, MS

Program Coordinator and Associate Professor Computer Technology

Frederick J. Nohmer, EdD

Assistant Professor Electrical Engineering Technology

Masoud Olia, PhD

Lecturer Mechanical Engineering Technology

Ronald E. Scott, ScD

Lecturer

Electrical Engineering Technology

Jerome Tapper, BSEE, PE

Lecturer

Electrical Engineering Technology

A listing of the School of Engineering Technology's part-time faculty follows. Each entry gives the faculty member's name; highest degree earned; professional affiliation; and University title, department, and year of appointment.

David J. Allen, MSCE

Consulting Engineer
Lecturer, Computer Technology (1985)

Arnold W. Almquist, MEd

Mathematics Instructor, Needham High School Senior Lecturer, Mathematics (1967)

Prabhat K. Andleigh, MS, MBA

Systems Architect, Lotus Development Corporation Associate Lecturer, Computer Technology (1992)

Robert B. Angus, MS

Consultant, Angus Associates Senior Lecturer, Electrical Engineering Technology (1947)

Francis M. Antczak, BSEE

Senior Engineer, Mass. Electric Co. Lecturer, Electrical Engineering Technology (1985)

Maureen P. Berggren, MEd

Mathematics Teacher, Quincy High School Senior Lecturer, Mathematics (1965)

Wayne M. Bethoney, BS

Mechanical Engineer, AMMRC Lecturer, Mechanical Engineering Technology (1982)

Jennifer A. Black, MS

Assistant Director, Graduate Engineering, Northeastern University Associate Lecturer, Computer Technology (1992)

Robert E. Bobeck, MEd

Senior Lecturer, Bristol Community College Senior Lecturer, Engineering Graphics (1976)

Rosanne L. Bogan, MS

Staff Assistant, School of Engineering Technology, Northeastern University Associate Lecturer, Computer Technology (1994)

Azzouz Boulenouar, MSEE

PhD Student, Northeastern University Lecturer, Computer Technology (1987)

James Brown, MBA

Consultant, Custom Consulting Lecturer, Manufacturing Engineering Technology (1983)

Kip A. Brown, BS

Programmer/Analyst, United States Department of Transportation Lecturer, Computer Technology (1982)

Thomas J. Bugos, PhD

Senior Software Engineer, Macsyma, Inc. Lecturer, Computer Technology (1985)

Vincent K. Butler, MS

Senior Systems Specialist, NYNEX Lecturer, Computer Technology (1982)

Robert W. Case, PhD

Coordinator for Day Mathematics, School of Engineering Technology Senior Lecturer, Mathematics (1976)

Joan M. Chrusciel, MEd, MA

Mathematics Department Head, Quincy High School Senior Lecturer, Mathematics (1980)

Wendell R. Collymore

Buyer, Polaroid Corp.
Senior Lecturer, Engineering Graphics (1976)

Richard J. Colvario, MEd

Database/Technical Support, Massachusetts Department of Revenue Lecturer, Computer Technology (1987)

Roger T. Connor, MEd

Retired

Senior Lecturer and Course Consultant, Calculus and Differential Equations (1953)

Robert J. Cormier, BS, Registered Landscape Architect (CT, MA, NY, RI)

Site Planner and Land Architect, Self-Employed Lecturer, Architectural Engineering Technology (1984)

James B. Corscadden, MEd, AMT

Principal, Ellis Mendell School Senior Lecturer, Mathematics (1967)

William L. Crenshaw, MSME, PE

Senior Mechanical Engineer, US Army Materials and Mechanics Research Center Senior Lecturer, Mechanical Engineering Technology (1978)

David C. Crockett, MSME

Senior Engineer, Raytheon Equipment Division Senior Lecturer, Mechanical Engineering Technology (1969)

Gregory Czarnowski, MEd

Marketing and Advertising Consultant Lecturer, Technical Communications (1982)

Thomas R. Deveney, MA

Principal, Thomas J. Kenny School Senior Lecturer, Mathematics (1965)

Jane E. DeVoe, MA

Senior Lecturer in Mathematics, Northeastern
University
Senior Lecturer, Mathematics (1980)

Senior Lecturer, Mathematics (1980)

Douglas H. Diamond, BSEE

Program Manager, Analytical Systems Engineering Corp. Senior Lecturer, Mathematics (1968)

Daniel L. Donabedian, MBA

Supervisory Industrial Engineer, Department of the Air Force

Associate Lecturer, Engineering Economy (1992)

Gerard C. Donovan, AS

President, Donovan Test Engineering Services Company

Associate Lecturer, Computer Technology (1993)

Leonard F. Dow, MS, PE

Staff Engineer, Boston Edison Co.
Senior Lecturer, Electrical Engineering Technology
and Course Consultant, Circuit Analysis and
Circuit Analysis Laboratories (1970)

William Dubie, BA, BS, MA

Technical Editor, Digital Equipment Corporation Lecturer, Technical Communications (1986)

David P. Durant, MEd, MS

Teacher, Boston Latin School Lecturer, Mathematics (1983)

Henry B. Eden, BA

Vice-President, Tech-Graphics Senior Lecturer, Engineering Graphics (1957)

Walter E. Engstrom, MS

Physics Instructor, Braintree High School Lecturer, Physics (1985)

Adolf J. Erikson, MBA, PE (MA)

President, A.E. Engineering Corp.
Senior Lecturer, Engineering Graphics (1966)

John M. Flaherty, PhD

President, Flaherty Research Senior Lecturer, Electrical Engineering Technology (1976)

James J. Flannery, MS

Manager, Planning Research and Communications, Boston Edison Company Lecturer, Electrical Engineering Technology (1980)

Donald W. Fogg, MSEE

Senior Engineering Scientist, Martin Marietta Associate Lecturer, Electrical Engineering Technology (1989)

Mario R. Forziati, BET

Field Applications Engineer, Emulex Corporation Associate Lecturer, Computer Technology (1990)

Constantine Fountzoulas, PhD

Materials Research Engineer, US Army Materials Technology Laboratory

Lecturer, Mechanical Engineering Technology (1985)

John J. Frazier, BS

Retired

Lecturer, Physics (1981)

Thomas G. Fratto, AM

Mathematics Teacher, Cambridge Rindge and Latin School

Lecturer, Computer Technology (1987)

Steven R. Geddis, MS

Project Leader, Database Technical Support, Massachusetts Department of Revenue Associate Lecturer, Computer Technology (1992)

Mable D. Gholar

Electronic Technician, Northeastern University Associate Lecturer, Electrical Engineering Technology (1990)

Bernard F. Goldstein, PhD

Manager/Controls, Dynamics Research Corp.

Senior Lecturer, Electrical Engineering Technology
(1974)

Boris Gommerstadt, PhD

Associate Professor, Northeastern University Lecturer, Mechanical Engineering Technology (1984)

Philip R. Haberstroh, MSEd

Assistant Head Master, Boston Latin School Lecturer, Mathematics (1981)

W. Dale Hall, SB, PhD

Technical Staff, MITRE Corp. Lecturer, Mathematics (1981)

Djamel Hamiroune, MS

Teaching Assistant, Northeastern University Associate Lecturer, Mechanical Engineering Technology (1991)

Francis R. Hankard, MS

Retired

Senior Lecturer and Course Consultant, Physics (1946)

Daniel H. Hornbarger, MS

National Systems/Support, Blue Cross of Massachusetts

Lecturer, Computer Technology (1986)

Charles E. Jacob, MSEd, MLS

Retired

Senior Lecturer, Physics (1967)

Michael E. Jammal, MS

Principal Manufacturing Engineer, Modicon Incorporated Lecturer, Manufacturing Engineering Technology

Arthur W. John, MS, MBA

Consultant

(1989)

Senior Lecturer, Electrical Engineering Technology (1968)

Peter R. Jonietz, MS

Software Engineer, Computervision
Associate Lecturer, Computer Technology (1992)

John Joseph Joyce, MSEd, MA

Director of Mathematics, Winchester High School Lecturer, Mathematics (1983)

Barbara Kane, MS

Teacher, Department of Computer Education, Natick Public Schools Associate Lecturer, Computer Technology (1993)

Stephen M. Kane, EdD

Associate Professor, Co-op Education, Northeastern University Lecturer, Mathematics (1987)

Amin Karimpour, MSEE

Assistant Professor, Franklin Institute of Boston Associate Lecturer, Computer Technology (1989)

Edward V. Kelly

Electronic Technician, Northeastern University Associate Lecturer, Electrical Engineering Technology (1991)

John F. King, MBA

Consultant

Associate Lecturer, Manufacturing Engineering Technology (1992)

John J. Klein, MSEE

Retired

Senior Lecturer, Electrical Engineering Technology (1949)

Peter L. Kobs, MS

Writing Consultant, Digital Equipment Corp.

Associate Lecturer, Technical Communications
(1987)

Abdelmadjid M. Lahlaf, PhD

Project Engineer, GEI Consultants, Inc. Associate Lecturer, Mechanical-Structural Engineering Technology (1987)

James E. Lennox, MS

Principal Engineer, Polaroid Corporation Associate Lecturer, Computer Technology (1988)

Demetre P. Ligor, MSEE, PE

President, Applied Measurements, Inc. Senior Lecturer, Physics (1959)

John F. Limongelli, BSEE

Consultant

Associate Lecturer, Electrical Engineering Technology (1988)

Guido W. Lopez, PhD

Professor, Daniel Webster College Lecturer, Mechanical Engineering Technology (1988)

John F. Lutkevich, BBA

Retired

Senior Lecturer, Engineering Graphics (1956)

Michael R. MacNeil, BSBA

Electronic Technician, Northeastern University Lecturer, Electrical Engineering Technology (1985)

Eliot A. Madow, BET

Managing Associate, Coopers & Lybrand Lecturer, Computer Technology (1985)

Carl J. Mellea, MS, PE (MA, ME, NH, RI, VT)

Project Manager Associate, Howard, Needles, Tammen & Bergendorff

Senior Lecturer, Mechanical-Structural Engineering Technology (1960)

Amie Miller-Smith, BA

Senior Technical Writer, Digital Equipment Corporation

Associate Lecturer, Technical Communications (1991)

Vladislav Mlch

Laboratory Technician, Northeastern University Associate Lecturer, Mechanical Engineering Technology (1991)

Nihar Mohanty, PhD

Engineer, Environmental Protection Agency Associate Lecturer, Environmental Engineering Technology (1992)

Louis A. Moore, BSCE, RLS

Chief Engineer, Commonwealth of Mass., Land Court, Boston

Senior Lecturer, Mechanical-Structural Engineering Technology (1972)

Wassim G. Najm, PhD

Electronics Engineer, Volpe National Transportation Systems Center

Lecturer, Electrical Engineering Technology (1985)

Yesugey Oktay, MS, PE (CA, MA, ME, NY)

Engineering Services, Boston Edison Co. Senior Lecturer, Mechanical-Structural Engineering Technology (1970)

Douglas J. Ordway, MEd

Computer Coordinator, Boston Latin School Senior Lecturer, Computer Technology (1975)

Francis A. Pepicelli, BS

Retired

Senior Lecturer, Engineering Graphics (1976)

Walter J. Phinney, MBA

Engineering Manager, Raytheon Missile Division Senior Lecturer, Engineering Graphics (1977)

Andronicos Phylactopoulos, MS

Teaching Assistant, Northeastern University Associate Lecturer, Mechanical Engineering Technology (1991)

Dominic A. Piccione, MS, PE (MA, VA)

Senior Engineer, Stone & Webster Engineering Corp. Senior Lecturer, Mechanical Engineering Technology (1966)

Richard H. Pike, MBA

Lecturer, Northeastern University Senior Lecturer, Engineering Economy (1980)

Norman C. Poirier, MS, PE

Research Associate, Northeastern University Senior Lecturer, Telecommunications (1966)

Dennis D. Poulin, MS

Senior Microwave Systems Engineer, Hewlett-Packard Lecturer, Electrical Engineering Technology (1989)

Donald J. Poulin, BSIT, PE

Retired

Senior Lecturer, Electrical Engineering Technology (1970)

Daniel W. Pratt, MS

Mathematics Department, Boston Latin School Senior Lecturer and Course Consultant, Mathematics through Pre-Calculus (1967)

Charles H. Price, Jr., MSEE

Retired

Senior Lecturer, Electrical Engineering Technology (1960)

Robert Rancourt, MSEE

Electrical Engineer, MITRE Corp. Senior Lecturer, Mathematics (1984)

William S. Ricci, MS

Materials Engineer, General Electric Aircraft Engineers

Associate Lecturer, Manufacturing Engineering Technology (1992)

Edward P. Ricupero, MEd

Head of Mathematics Department, Everett High School

Lecturer, Mathematics (1983)

Robert J. Ritchie, BS

Retired

Senior Lecturer, Engineering Graphics (1980)

Robert A. Rosenberg, ScD

Engineering Consultant, Stone & Webster Engineering Corp.

Senior Lecturer, Mechanical Engineering Technology (1983)

Thomas E. Ruden, MS

Principal Engineer, Raytheon Co. Missile Systems Labs.

Senior Lecturer, Physics (1967)

Annino D. Salvucci, AS

Mechanical Engineer, Micracor, Inc.

Lecturer, Engineering Graphics (1983)

Stephen Schwarm, BSEE

Senior Technical Consultant, Prime Computer Inc. Lecturer, Computer Technology (1985)

Randall Seed, MS

Teaching Assistant, Northeastern University Associate Lecturer, Electrical Engineering Technology (1994)

John W. Shaw, BSET

Field Service Engineer, Northeast Electronics, Inc. Lecturer, Electrical Engineering Technology (1985)

Joseph E. Steffano, Sr., MS, MBA, PE (CT, MA, ME, NH, NY, PA, RI, VT), RLS (CT, MA, ME, NH, RI, VT)

Chief Engineer, Stone & Webster Engineering Corp., Infrastructure Division

Senior Lecturer, Mechanical-Structural Engineering Technology (1965)

Harold J. Stengel, SB

Secondary Teacher in Mathematics, Boston Latin School

Lecturer, Mathematics (1982)

Robert E. Stewart, BS

Software Engineer, Textron Defense Systems Associate Lecturer, Computer Technology (1991)

M. Carlton Storms, MEd

Teacher, Braintree High School Senior Lecturer, Physics (1967)

Nabil S. Sukkar, MSCE

Project Manager, American Science and Engineering Lecturer, Mechanical-Structural Engineering Technology (1984)

Raimundas Sukys, MS

Retired

Senior Lecturer, Electrical Engineering Technology (1962)

Donald M. Sullivan, MEd

Mathematics Teacher, Dedham High School Lecturer, Mathematics (1984)

Paul A. Sullivan, BSET

Manager, New England Telephone Associate Lecturer, Electrical Engineering Technology (1990)

James Surette

Laboratory Supervisor, Northeastern University Lecturer, Mechanical Engineering Technology (1990)

David G. Sveden, MEd

Mathematics Instructor, Town of Needham Senior Lecturer, Mathematics (1979)

Rena L. Tobias, MA

Research and Development Technical Specialist, Visibility, Inc.

Lecturer, Computer Technology (1985)

David K. Toebes, MSEE

Design Engineer, Raytheon Co. Lecturer, Mathematics (1987)

John S. Travia, MSEE, PE

Retired

Senior Lecturer, Electrical Engineering Technology (1965)

Edward P. Tribuna, BET, FAA, A&P Certificate

Software Services Consultant, Digital Equipment Corporation

Lecturer, Electrical Engineering Technology (1985)

Paul T. Tsang, MS

Mechanical Design Engineer, Metcalf & Eddy Lecturer, Mechanical Engineering Technology (1988)

John F. Videler, MS

Retired

Senior Lecturer, Electrical Engineering Technology (1968)

Michael P. Walker, MSCE

Structural Engineer, GEI Consultants
Associate Lecturer, Structural Engineering
Technology (1993)

Joel R. Weinstein, BSEE

President, High Technology Marketing Senior Lecturer, Computer Technology (1977)

James T. Welch, MS

Principal Engineer, Ungermann-Bass, Inc. Senior Lecturer and Course Consultant, Computer Technology (1977)

Richard Whalen, MS

Teaching Assistant, Northeastern University Associate Lecturer, Mechanical Engineering Technology (1992)

78 Faculty

Joseph F. Willard, BS

Retired

Senior Lecturer, Surveying and Highway Engineering Technology (1949)

Albert G. Wilson, MS, PE, SE (IL)

Retired

Senior Lecturer and Course Consultant, Mechanical Engineering Technology (1948)

Susan L. Wood, BSEE

Software Engineer, Ungermann-Bass, Inc. Lecturer, Computer Technology (1984)

Bernie T. Woodrow, MS

Loss Control Consultant Associate Lecturer, Manufacturing Engineering Technology (1992)

Albert C. Yang, MS, MA, AIA

Director, Research and Development, Sigma Design, Inc. Associate Lecturer, Computer Technology (1991)

Robert T. Yosca, MA, MS

Technical Instructor, Cognex Corporation Associate Lecturer, Engineering Probability and Statistics (1982)

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Nonna K. Lennikum, MEd, N

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Roy A. Dalsheim, BS

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David S. Goldman, MS (Program Consultant, Manufacturing Engineering Technology, Evening Program)

Francis R. Hankard, MA (Course Consultant, Physics) Eric W. Hansberry, MS (Course Consultant, Engineering Graphics and Kinematics)

George F. Kent, MS, MBA, PE (CT, MA) (Program Consultant, Mechanical Engineering Technology, Day and Evening Programs)

Nonna K. Lehmkuhl, MEd, MS (Program Consultant, Computer Technology, Day and Evening Programs)

Daniel W. Pratt, MS (Course Consultant, First-Year Mathematics through Pre-Calculus)

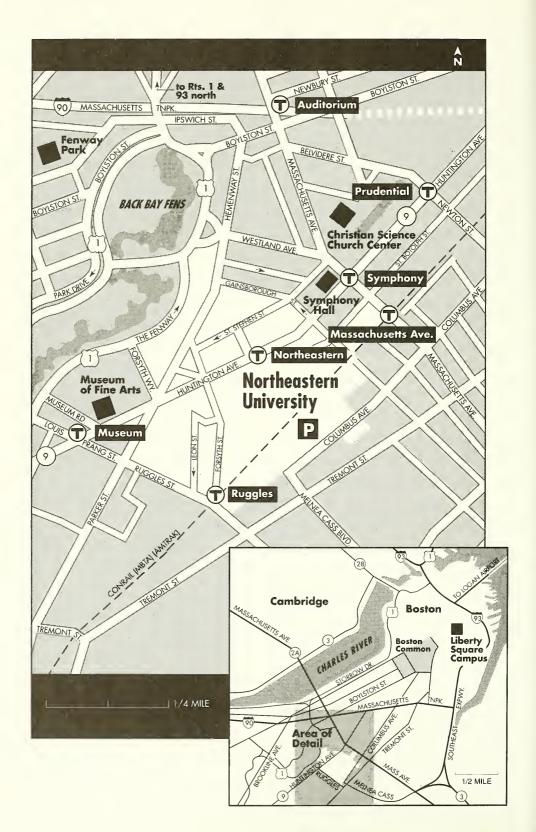
Ronald E. Scott, ScD (Program Consultant, Electrical Engineering Technology, Day and Evening Programs)

James Welch, MS (Course Consultant, Computer Technology Hardware Courses)



Campus Maps

Access to Boston



Directions

From the North Route I-93 or Route 1

At the merge with Route 3 (the Southeast Expressway), take the Storrow Drive exit and proceed to the Fenway exit. Follow signs for Boylston Street Inbound, and bear right at Westland Avenue, which leads to Massachusetts Avenue. Turn right onto Massachusetts Avenue, proceed to the third traffic light, and turn right onto Columbus Avenue. The Northeastern University Parking Garage is less than one-half mile on your right at 795 Columbus Avenue.

From the West Route 90 Mass Turnpike

Take Exit 22 (Copley Square), and bear right. Proceed to the first traffic light and turn right on Dartmouth Street. Then take the next right onto Columbus Avenue. It is approximately one mile to the Northeastern University Parking Garage at 795 Columbus Avenue.

Route 9 Inbound

Proceed inbound on Route 9 until it becomes Huntington Avenue (approximately one-half mile after Brigham Circle), and take a right onto Ruggles Street. At the third traffic light turn left on Tremont Street, take the next left onto Columbus Avenue, and then turn right. The Northeastern University Parking Garage is two blocks on your left at 795 Columbus Avenue.

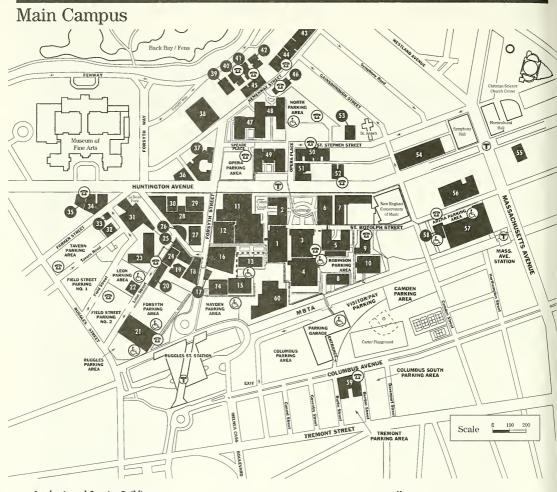
From the South Route 3 Southeast

Take Exit 18 (Massachusetts Avenue), and at the end of the ramp proceed straight onto Melnea Cass Boulevard. Continue for approximately two miles, and turn right onto Columbus Avenue. The Northeastern University Parking Garage is two blocks on your left at 795 Columbus Avenue.

By Public Transportation

Expressway

Take the commuter rail to Ruggles Station, Back Bay Station, or North Station. From Back Bay Station, transfer to the outbound Orange Line (to Forest Hills) for two stops. Get off at Ruggles Station, which is on one side of the Northeastern University campus. From North Station, take any Green Line train to Government Center; transfer to the outbound "E" Green Line train; get off at the Northeastern University stop (the first stop above ground).



Academic and Service Buildings

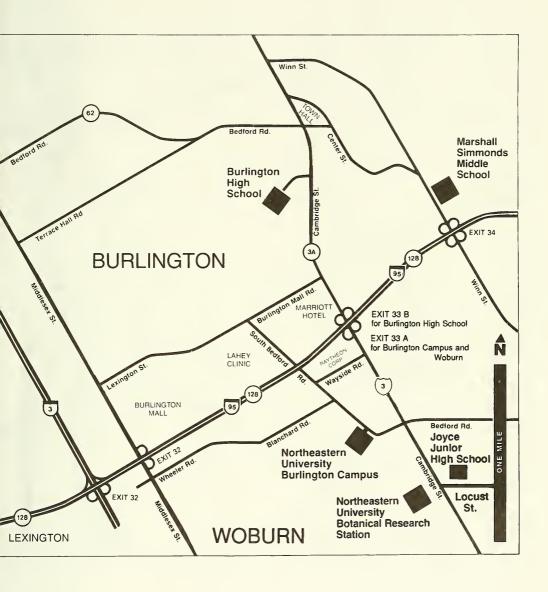
12 19 11 39 28	John D. O'Bryant Africon-Americon Institute (AF) Barletta Natularium (BN) Bailer Plant Cobat Physical Education Building (CB) TTY: Rm 110 Cohners Hall (CA) TTY: Rm 151 Cargill Hall (CG) Churchill Hall (CH)	7 54 10 26 41	316 Huntington Avenue (Nartheostern at the YMCA) (BY) Huntington Plaza (271 Huntington Avenue) (HN) Hurtig Holl (HT) Kariotis Holl (KG) Kerr Holl (Foculty Center) (KH)
59	Columbus Place (716 Columbus Avenue) (CP)	29 25	Knowles Center (KN) Lake Hall (LA) TTY: Rm 203
56 9 40	Cotting School (CT) Cullinone Hall (CN) Cushing Hall (CU)	57 58 20	Matthews Arena (MA) Matthews Arena Annex (MX) Meserve Holl (ME) TTY: Rm 305
14 27	Dono Research Center (DA) Dockser Holl (DK) TTY: Rm 107	5	Mugar Life Science Building (Peobody Health Prafessians Center) (MU)
3 4	Dadge Hall (OG) Ell Student Building (Auditarium) (EL) TTY: Rms 04,104 Ell Student Center (Student Lounge) (EC) TTY: Rm 255	18 31 2	Nightingale Hall (NI) TTY: Rm 125 Porker Building (PA) Richards Hall (RI) TTY: Rms 150, 254
16 17 38	Farsyth Building (FR) TTY: Rms 100, 135 Farsyth Building Annex (FA) Forsyth Dentol Building (FE)	8 21 15	Rabinson Holl (RB) Ryder Holl (RY) TTY: Rms 170, 180, 251, 270 Snell Engineering Center (SN) TTY: Rm 120
33 24	Hayden Hall (HA) TTY: Rms 120, 202 Hillel-Froger (HF) Halmes Holl (HO) TTY: Rm 276	50 50	Snell Library (SL) TTY: Reference Desk 122 St. Stephen Street (SS) Stearns Center (ST) TTY: Rm 302
55	236 Huntington Avenue (HU)	32	26 Tavern Road (TA)

	Residence Buildings		
34	Burstein Hall	45	Loftmon Holl and 153 Hemenway Street
43	Kennedy Hall	42	Melvin Hall
46	142-148 Hemenway Street	35	Rubenstein Hall
45	153 Hemenwoy Street and Loftman Hall	44	Smith Hall
7	316 Huntington Avenue	49	Speare Holl
	(Northeastern at the YMCA)	48	Stetsan East TTY (public)
52	319 Huntingtan Avenue	47.	Stetson West
51	337 Huntington Avenue	50	106/110/116/122 St. Stephen Street
36	407 Huntington Avenue	23	Willis Holl
- 41	Kerr Hall	37	White Holl
53	Light Hall	61	400 The Fenway

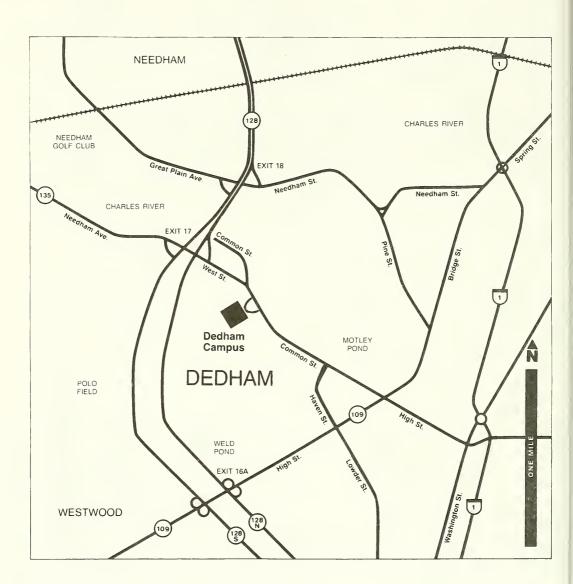
Key	
Academic, residential, and service buildings Handicop parking	(A) (A)
Accessible routes	
Parking oreas	
Street direction	
Underground tunnel Emergency telephone	(a) (a)
TTY locations See alphabetic list of buildings for TTY locations.	TTY ; Rm 000 u

Maps are provided by the Information Center, 115 Richards Hall, extension 2736 (TTY extension 3768). Some buildings on this map are used but not owned by Northeastern University. 8/93

Burlington



Dedham



Marlboro



Accreditation Statement

Northeastern University is accredited by the New England Association of Schools and Colleges, Inc.

Delivery of Services

Northeastern University assumes no liability for delay or failure to provide educational or other services or facilities due to causes beyond its reasonable control. Causes include, without limitation, power failure, fire, strikes by University employees or others, damage by natural elements, and acts of public authorities. The University will, however, exert reasonable efforts, when it judges them to be appropriate, to provide comparable services, facilities, or performance; but its inability or failure to do so shall not subject the University to liability.

The Northeastern University Undergraduate Catalog contains current information about the University calendar, admissions, degree requirements, fees, and regulations; however, such information is not intended and should not be regarded to be contractual.

Northeastern University reserves the sole right to promulgate and change rules and regulations and to make changes of any nature in its program; calendar; admissions policies, procedures, and standards; degree requirements; fees; and academic schedule whenever necessary or desirable, including, without limitation, changes in course content and class schedule, the cancellation of scheduled classes and other academic activities, and the substitution of alternatives for scheduled classes and other academic activities. In any such case, the University will give whatever notice is reasonably practical.

Northeastern University will endeavor to make available to its students a fine education and a stimulating and congenial environment. However, the quality and rate of progress of an individual's academic career and professional advancement upon completion of a degree or program are largely dependent on his or her own abilities, commitment, and effort. In many professions and occupations, there are also requirements imposed by federal and state statutes and regulatory agencies for certification or entry into a particular field. These requirements may change while a student is enrolled in a program and may vary from state to state or country to country. Although the University stands ready to help its students find out about requirements and changes in them, it is the student's responsibility to initiate the inquiry.

Disability Resource Center

The Disability Resource Center provides a variety of disability-related services and accommodations to Northeastern University's students and employees with disabilities.

Northeastern University's compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 are coordinated by the Dean and Director of the Disability Resource Center. Persons requiring information regarding the Disability Resource Center should contact Dean G. Ruth Bork at 617-373-2675 (voice) or 617-373-2730 (TTY).

Emergency Closing of the University

Northeastern University has made arrangements to notify students, faculty, and staff by radio and television when it becomes necessary to cancel classes because of extremely inclement weather. AM radio stations WBZ (1030), WEEI (590), WHDH (850), WRKO (680), and FM stations WBMX (98.5) and WFNX (101.7) are the radio stations authorized to announce the University's decision to close. Television stations WBZ-TV4, WCVB-TV5, and WHDH-TV7 will also report cancellations. Since instructional television courses originate from live or broadcast facilities at the University, neither the classes nor the courier service operate when the University is closed. Please listen to the radio or television to determine whether the University will be closed.

If a storm occurs at night, the announcement of University closing is given to the radio stations at approximately 6 AM. Classes are generally canceled for that entire day and evening at all campus locations unless stated otherwise. When a storm begins late in the day, cancellations of evening classes may be announced. This announcement is usually made between 2–3 PM.

Equal Opportunity Policy

Northeastern University does not discriminate on the basis of race, color, religion, sex, sexual orientation, age, national origin, disability, or veteran status in admission to, access to, treatment in, or employment in its programs and activities. In addition, Northeastern University will not condone any form of sexual harassment. Handbooks containing the University's nondiscrimination policies and its grievance procedures are available in the Office of Affirmative Action, 175 Richards Hall. Inquiries regarding the University's nondiscrimination policies may be directed to:

Ellen S. Jackson, Dean/Director Office of Affirmative Action 175 Richards Hall Northeastern University Boston, Massachusetts 02115 617-373-2133

Inquiries concerning the application of nondiscrimination policies may also be referred to the Regional Director, Office for Civil Rights, U.S. Department of Education, J. W. McCormack Building, Post Office Court House, Room 222, Boston, Massachusetts 02109-4557.

Family Educational Rights and Privacy Act

In accordance with the Family Educational Rights and Privacy Act of 1974, Northeastern University permits its students to inspect their records wherever appropriate and to challenge specific parts of them when they feel it is necessary to do so. Specific details of the law as it applies to Northeastern are printed in the Student Handbook and are distributed annually at registration of the University College and graduate schools.

Fee Schedule and Academic Calendar

The Fee Schedule and Academic Calendar has been enclosed as a separate insert to this *Bulletin*. If one has not been enclosed, contact the School of Engineering Technology, 617-373-2500.

Full-Time and Day Programs

This *Bulletin* contains information about the evening and weekend programs offered by the School of Engineering Technology. If you need information about full-time or day programs offered by Northeastern University, contact the Department of Undergraduate Admissions, 139 Richards Hall at 617-373-2200.

Insufficient Enrollment Disclaimer

Northeastern University reserves the right to cancel any course if minimum enrollments, appropriate faculty, or academic facilities are unavailable to meet standards.

Precedence Statement

The School of Engineering Technology Bulletin contains the University's primary statements about

these academic programs and degree requirements, as authorized by the president or Board of Trustees. For information about other academic policies and procedures; student responsibilities, academic and extracurricular life; faculty rights and responsibilities; or general personnel policies, benefits, and services, please refer to the Academic Operations Manual, Undergraduate and Graduate Student Handbook, Cooperative Education Handbook, Faculty Handbook, Benefits and Services Handbook, and related procedural guides as appropriate.

Tuition and Fees Policy

Tuition rates, all fees, rules and regulations, courses and course content are subject to revision by the president and the Board of Trustees at any time.

Photography: J. D. Levine and Russ Sparkman

Northeastern University Publications 01.94.25



Northeastern University School of Engineering Technology Academic Calendar 1994-1995

Fall Quarter 1994

Columbus Day observed

Registration Tuesday-Wednesday, September 6-14

Fall quarter classes begin Monday, September 26

Monday, October 10

Veterans Day observed No classes Friday, November 11

Thanksgiving recess No classes Thursday-Saturday, November 24-26

No classes

Monday-Saturday, December 12-17 Final examination period for

fall quarter

No classes Monday-Saturday, December 19-December 31 Christmas vacation

Winter Quarter 1995

Registration Monday-Thursday, December 5-8

Winter quarter classes begin Tuesday, January 3

Martin Luther King, Jr.'s Birthday No classes Monday, January 16 observed

Presidents Day observed No classes Monday, February 20

Final examination period for Monday-Saturday, March 20-25

winter quarter

Spring recess (or makeup period Monday-Saturday, March 27-April 1 for snow days)

Spring Quarter 1995

Registration Monday-Thursday, March 13-16

Spring quarter classes begin Monday, April 3

Patriots Day observed No classes Monday, April 17

No classes Monday, May 29 Memorial Day observed

Final examination period for Monday-Saturday, June 12-17

spring quarter

Commencement Saturday, June 17

Northeastern University School of Engineering Technology Registration Schedule 1994-1995

Each day listed in the Registration Schedule is followed by a letter code in parentheses. This code indicates the registration times for that particular day. A key for the codes is printed on the last line of the schedule.

Place of Registration	Fall 1994	Winter 1995	Spring 1995	Summer 1995
Boston Main campus*	Tuesday- Friday(b) September 6-9 Saturday(a) September 10 Monday- Wednesday(b) September 12-14	Monday- Thursday(b) December 5-8	Monday- Thursday(b) March 13-16	Registration for entire summer quarter Monday- Thursday(b) June 5-8 Registration for second five-week term Monday- Tuesday(b) July 10-11
Burlington campus*	Wednesday- Thursday(c) September 7-8 Monday- Tuesday(c) September 12-13	Monday- Wednesday(c) December 5-7	Monday- Wednesday(c) March 13-15	Registration for entire summer quarter Monday- Wednesday(c) June 5-7 Registration for second five-week term Monday July 10(c)
Dedham campus*	Thursday(c) September 8 and Monday(c) September 12	Monday- Wednesday(c) December 5-7	Monday- Wednesday(c) March 13-15	
Downtown Boston campus	Tuesday- Thursday(d) September 6-8 Monday- Tuesday(d) September 12-13	Monday- Wednesday(d) December 5-7	Monday- Wednesday(d) March 13-15	

Registration Schedule Continued

See reverse side for Academic Calendar and Fee Schedule.)

lace of Registration	Fall 1994	Winter 1995	Spring 1995
ramingham High School	Tuesday(c)	Monday-	Monday-
	September 6	Tuesday(c)	Tuesday(c)
	Monday(c)	December 5-6	March 13-14
	September 12		
lalden High School	Wednesday(c)	Monday(c)	Monday(c)
	September 7 and	December 5	March 13
	Monday(c)		
	September 12		
arlborough High School*	Wednesday(c)	Monday(c)	Monday(c)
	September 7 and	December 5	March 13
	Monday(c)		
	September 12		
larshfield High School	Thursday(c)	Tuesday(c)	Tuesday(c)
	September 8	December 6	March 14
	Tuesday(c)		
	September 13		
ilford High School	Thursday(c)	Tuesday(c)	Tuesday(c)
	September 8	December 6	March 14
	Tuesday(c)		
	September 13		
estwood High School	Tuesday(c)	Monday-	Monday-
	September 6	Wednesday(c)	Wednesday(c)
	Tuesday(c)	December 5-7	March 13-15
	September 13		
eymouth Junior	Wednesday(c)	Monday-	Monday-
ligh School	September 7	Wednesday(c)	Wednesday(c)
	Monday(c)	December 5-7	March 13-15
	September 12		

19:00 AM-Noon (b)9:30 AM-7:00 PM (c)5:30 PM-7:30 PM (d)11:00 AM-7:00 PM

Counselors available at these locations only.

Summer Quarter 1995

Monday-Thursday, June 5-8 Registration for entire quarter Summer quarter classes begin Monday, June 19 Tuesday, July 4 Independence Day observed Registration for second Monday-Tuesday, July 10-11 five-week term Monday, July 24 Second summer quarter begins Labor Day observed No classes Monday, September 4 Final examination period for Held during last class session each term

Fee Schedule

summer quarter

Tuition Related Fees	Fee
Tuition*	\$170.00 per quarter hour
Late payment fee	\$ 75.00
Student Center fee (main campus only)	\$ 8.25 per quarter

^{*}University College courses are offered at \$150.00 per quarter hour.

Fee
\$50.00
\$ 2.00 per copy
\$40.00 per year
\$50.00
\$10.00

RLB 07.94



